

Introduction and Methodology

Microchip Technology Incorporated's (Microchip) semiconductor devices are assembled at our assembly facility outside Bangkok, Thailand, and by subcontracted assembly sites throughout the world. Frequently, the qualified Bill of Materials (BOM) will vary among assembly sites for a given package configuration. The majority of variation lies in the mold compound and/or the internal die attach material used. The semiconductor device material data presented is calculated using a mass balance methodology for the primary qualified assembly site or the most commonly produced BOM.

RoHS Recast or "RoHS2:

The European Union published a revision ("recast") of the Restriction of Hazardous Substances (RoHS) in Electrical and Electronic Equipment Directive (Directive 2002/95/EC) on July 1, 2011. The original RoHS Directive was adopted on January 27, 2003. It was recast by the European Parliament and Council on June 8, 2011 and is often referred to as "RoHS II". There are no additions to or differences in the six restricted substances. Electronic piece parts; like IC/semiconductors, are not required to have or maintain "technical documentation" in line with Module A of Annex II to Decision No 768/2008/EC in accordance with article 7b of Directive 2011/65/EU. Microchip semiconductor products or devices still fall under the same conditions they were under the old RoHS declarations. Piece parts (IC) are still not classified as EEE.

- Microchip's plastic semiconductor products are approved for RoHS required designs without exemption.
- All Ceramic packaged products contain Pb (lead) and are not recommended for RoHS required applications.
- FET/PDFN packages utilize EU exemption 7(a) Pb (lead) in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead).

Microchip semiconductor products do not contain or else in negligible/ nondetectable trace levels the four phthalate substances under evaluation:

- Hexabromocyclododecane (HBCDD)
- Di- (2-ethylhexyl) phthalate (DEHP)
- Dibutyl phthalate (DBP)
- Butyl benzyl phthalate (BBP)



Ozone Depleting Materials

Microchip Technology Incorporated's semiconductor devices neither contain nor are manufactured with Class I or Class II Ozone Depleting Chemicals ("ODCs"). For purposes of this document "ODCs" are those substances listed in 40CFR82A App A, and 40CFR82A App B, July 1, 2008.

Brominated Flame Retardant Polymers

Beginning 1 July 2009, Microchip production locations were qualified as Halogen-Free as defined per IEC 61249-2-21:2003: Bromine (Br) \leq 900 and Chlorine (Cl) \leq 900 ppm by homogeneous material weight. With total Bromine (Br) plus Chlorine (Cl) content \leq 1,500 ppm by homogeneous material weight. Additionally, Antimony Trioxide (Sb2O3) is less than 1,000 ppm.

Plastic resin materials used in Microchip product packages meet the requirements of UL94V-0 flame classification unless otherwise stated on the product datasheets.

Prior to July 2009, Microchip's semiconductor devices may have contained Antimony Trioxide, [Sb2O3] (CAS # 1309-64-4) and one of two brominated (Br/B08) phenolic/epoxy polymers: CAS # 68541-56-0 or CAS # 40039-93-8 used in the flame retardant system of the molding compounds. Neither of these brominated phenolic/epoxy polymers are regulated by European Union's REACH Directive. Microchip's semiconductor devices do not contain pentaBDE or octaBDE, two brominated flame retardants regulated by European Union Directive 2003/11/EC (6 February 2003).

Non-Use of Inorganic Particulate Red Phosphorous as a Flame Retardant in Mold Compounds

The mold compounds used by Microchip and its sub-contract assembly houses to assemble Microchip's semiconductor devices **do not** contain inorganic particulate red phosphorous.

Substances of Concern

Microchip's semiconductor products may contain Nickel (Ni) in one or more of three applications:

- Nickel is one of the three plating materials used on the pins of the semiconductor, hence, the term Nickel (Ni) / Palladium (Pd) / Gold (Au) pin finish. The plating order is determined by the physical properties (adhesiveness) between each substance; Copper to Nickel to Palladium to Gold. Gold is the outer most substance, forming a shield around the Nickel and protecting against skin contact;
- Nickel is an alloying element in three lead frame alloys used by Microchip C194, C7025, and A42; and
- Nickel may be impurity in the matte tin plating.

Each occurrence is compliant with EU Directive 94/27/EC. Please consult the specific Material Content Declaration (MCD) for the estimated material content value.



Absence of Chemical Substances

If a chemical substance is absent from the spreadsheet reflecting its Bill of Materials at specific assembly site, its absence from the chemical substance list(s) means:

- The chemical substance is **NOT** an intentional ingredient in the semiconductor device; and
- To the best of Microchip's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, <u>if any</u>, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Recyclate Information (IMDS Format)

Amount of contained recyclate – as released?	0%
Amount of contained recyclate – as measured?	0%
Amount of contained recyclate – post industrial recyclate?	0 g / 0%
Amount of contained recyclate - post consumer recyclate?	0 g / 0%

Joint Industry Guide No. JIG-101 Ed. 4.1

Microchip semiconductor products meet the requirements of the Consumer Electronics Association (CEA), DIGITALEUROPE, and Japanese Green Procurement Survey Standardization Initiative (JGPSSI) Joint Industry Guide - Material Composition Declaration for Electro technical Products - JIG-101 Ed. 4.1. This guide represents industry-wide consensus on the relevant materials and substances that shall be disclosed by suppliers when those materials and substances are present in products.

Implementation of copper wire bond

(PdCu) Palladium Copper Wire (CuPd) provides superior electrical performance over (Au) Gold Wire. Using PdCu bond wire provides a hedge on the rising prices which can affect the cost and supply of gold available for manufacturing. Therefore usage of PdCu wire helps ensure a steady supply of components that can support your ongoing design and business needs. It is Microchip's intent to convert all applicable packages within the next 18 to 24 month.

Changing the wire bond materials does not alter the world-wide environmental compliance or reporting category of any package/product. To facilitate content reporting, already listed mass balance ratios will not change. There should not be any significant change of total weight, percentage of total weight and sub component between 100/Gold (7440-57-5) and 98/Copper (7440-50-8) 2/Palladium (7440-05-3) [98Cu2Pd]

Rare Earth Metals

Microchip semiconductor products and modules do not contain or use any of the set of seventeen rare earth metals. However, Microchip does use cerium as cerium oxide during a manufacturing process of the integrated circuit. The supplier for this chemical has taken steps to mitigate the reduction of the



availability of cerium oxide. There is no anticipation of a shortage of this substance.

Packing Materials

To the best of our current knowledge and belief all product(s) shipment material(s) are compliant with Directive 2013/2/EU (Amending to EU 94/62/EC).

The protective tubes, end plugs and trays, reels and window envelopes used to hold the packing slip on the outer box in which the specific product is shipped may contain polyvinyl chloride (PVC) plastic with a total chorine content of more than 1,000 ppm.

Polycyclic Aromatic Hydrocarbons (PAHs)

To the best of our knowledge as of the date of this statement, Microchip Technology's products comply with all National and International legislation relating to Polycyclic Aromatic Hydrocarbons (PAHs). Microchip Technology does not manufacture or sell any products in which PAHs are an intentionally added material ingredient. Microchip Technology does manufacture certain products which contain carbon black (used in certain plastics) which may contain trace levels of PAHs as a by-product of the carbon black manufacturing process. The trace PAHs are tightly bound to the carbon black surface which is then firmly bound into the polymer matrix and so are not "bio-available".

Disposal

Products at the end of their life as well as any scrap must be disposed of following all local and national legal and regulating provisions.

Microchip Technology Incorporated's General Statement of Warranty

Microchip accepts no duty to notify any user of updates or changes. Further, the exclusive, limited product warranties provided by Microchip Technology Inc. and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgements, and invoices. Microchip shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on this document. It is the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and any reasonable or foreseeable uses of the components or systems used or purchased.

AICROCHIP Semiconductor Device Ty	/pe: EB 03 (Lead) DDP	АК (F4)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	544.12	(mg) Total	Mold Compound	% ot Total Weight	39.21
Eused Silica	60676-86-0	Mold Compound	34.505	478.823	345.048		Fused Silica	60676-86-0	88.00	
Epoxy Resin 1	Trade Secret	Mold Compound	1.274	17.684	12.743		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	1.176	16.324	11.763		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.764	24.485	17,645		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.098	1.360	980		Carbon Black	1333-86-4	0.25	
Undeclared	Trade Secret	Mold Compound	0.392	5,441	3,921		Undeclared	Trade Secret	1.00	
Copper	7440-50-8	Lead Frame	58,494	811.716	584,936			Total		
Tin	7440-31-5	Lead Frame	0.099	1.368	986	828.87	(mg) Total	Lead Frame	% of Total Weight	59.73
Silver	7440-22-4	Lead Frame	1.138	15,790	11.379	020.07	Copper	7440-50-8	97.93	55.15
Silver (Ag)	7440-22-4	Die Attach	0.086	1.198	864		Tin	7440-30-8	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.020	0.282	204		Silver	7440-31-5	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.020	0.282	33		Silver	7440-22-4 Total		
Silicon	7440-21-3		0.270	3.747	2.700	4.50				
		Chip (Die)		-	1	1.53	(mg) Total	Die Attach	% of Total Weight	0.11
Gold	7440-57-5	Wire Bond	0.070	0.971	700		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.610	8.465	6,100		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	1,387.700	1,000,000	Prop	rietary Curing agent & Hard		3	
	1.3877 g To	otal Mass						Total	100.00	
	ply with EU Directive 2002/9	5/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	IS Recast Direc	tive) and with	EU	3.75	Total (mg)	Chip (Die)	% of Total Weight	0.27
is semiconductor device and its homogenous materials com ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via	internal design controls, sup	plier declarations, and /or analytical test data.				3.75	Total (mg) Silicon	7440-21-3	100	0.27
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem orporated's knowledge and belief as of the date of this docu r, is not below the threshold of regulatory concern for any re	internal design controls, sup ical substance is NOT an into ment, there is no credible rea gulatory scheme world-wide	pplier declarations, and /or analytical test data. entional ingredient in the semiconductor device and ason to believe that the unavoidable impurity conce	, to the best of ntration of the	Microchip Teo chemical subs	:hnology		Silicon	7440-21-3 Total	100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem orporated's knowledge and belief as of the date of this docu /, is not below the threshold of regulatory concern for any re Iding compounds used by Microchip meet the UL94 V0 flam p://ul.com/global/eng/pages/offerings/industries/chemicals/p	internal design controls, sup ical substance is NOT an intr ment, there is no credible re gulatory scheme world-wide mability standard for plastics	pplier declarations, and /or analytical test data. entional ingredient in the semiconductor device and ason to believe that the unavoidable impurity conce s. You can access the UL iQTM family of databases t	, to the best of ntration of the o obtain a test	Microchip Tee chemical subs report at	chnology stance, if	3.75 0.97		7440-21-3	100	0.27
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ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem orporated's knowledge and belief as of the date of this docu /, is not below the threshold of regulatory concern for any re Iding compounds used by Microchip meet the UL94 V0 flam p//ul.com/global/eng/pages/offerings/industries/chemicals/p e protective "tubes" in which the specific product is shipped	internal design controls, sup ical substance is NOT an intr ment, there is no credible re- gulatory scheme world-wide mability standard for plastics lastics/ are made from polyvinyl ch this form concerning substa f its knowledge and belief, at been compiled based on the and some information may 1 and the average weight of a	opplier declarations, and /or analytical test data. entional ingredient in the semiconductor device and ason to believe that the unavoidable impurity concer- s. You can access the UL iQTM family of databases t loride (PVC) plastic. "Window envelopes" used to he ances restricted by ROHS in Microchip Technology In s of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets pro- tot have been provided by subcontract assemblers a nicicipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's s yy Incorporate vided by raw m	Microchip Tec chemical subs report at selip on the ou semiconducto d cannot guara aterial supplie	chnology stance, if iter box and r devices in intee the ers. Supplier formation is		Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem orporated's knowledge and belief as of the date of this docu /, is not below the threshold of regulatory concern for any re lding compounds used by Microchip meet the UL94 V0 flam p://ul.com/global/eng/pages/offerings/industries/chemicals/p e protective "tubes" in which the specific product is shipped tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in ir original packing materials is true and correct to the best o mpleteness and accuracy of data in this form because it has ormation is often protected from disclosure as trade secrets vided only as estimates of the average weight of these parts	internal design controls, sup ical substance is NOT an inter ment, there is no credible re- gulatory scheme world-wide mability standard for plastics lastics/ are made from polyvinyl ch this form concerning substa f its knowledge and belief, at been compiled based on the and some information may a and the average weight of a lilcon devices (sillcon IC) in i anty, express or implied, with	pplier declarations, and /or analytical test data. entional ingredient in the semiconductor device and ason to believe that the unavoidable impurity concer- s. You can access the UL iQTM family of databases t loride (PVC) plastic. "Window envelopes" used to he ances restricted by RoHS in Microchip Technology in a of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets pro- ot have been provided by subcontract assemblers inticipated significant toxic metals components. The the finished parts.	, to the best of ntration of the o obtain a test old the packing ncorporated's i gy Incorporated vided by raw m and raw maters d use estimates d	Microchip Tec chemical subs report at semiconducto d cannot guara aterial supplie al supplieral sup	chnology stance, if iter box and r devices in untee the irs. Supplier formation is trace levels roduct		Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem orporated's knowledge and belief as of the date of this docu r, is not below the threshold of regulatory concern for any re lding compounds used by Microchip meet the UL94 V0 flam p://ul.com/global/eng/pages/offerings/industries/chemicals/p e protective "tubes" in which the specific product is shipped tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in ir original packing materials is true and correct to the best o mpleteness and accuracy of data in this form because it has sormation is often protected from disclosure as trade secrets vided only as estimates of the average weight of these parts dopants, metals, and non-metal materials contained within s crochip Technology Incorporated does not provide any warra rranties provided by Microchip Technology Incorporated and	internal design controls, sup ical substance is NOT an inter- ment, there is no credible re- gulatory scheme world-wide mability standard for plastics lastics/ are made from polyvinyl ch this form concerning substa f its knowledge and belief, at been compiled based on the and some information may i and the average weight of a lilicon devices (silicon IC) in i anty, express or implied, with i tis subsidiaries are contain these to Material Content Dec	pplier declarations, and /or analytical test data. entional ingredient in the semiconductor device and ason to believe that the unavoidable impurity concer- s. You can access the UL iQTM family of databases t loride (PVC) plastic. "Window envelopes" used to he ances restricted by RoHS in Microchip Technology In s of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets pro- to have been provided by subcontract assemblers in inticipated significant toxic metals components. The the finished parts. In respect to the information provided in this declarat ed in Microchip's standard terms and conditions of larations and shall not be liable for any damages, di	, to the best of ntration of the o obtain a test old the packing ncorporated's s gy Incorporated vided by raw m and raw materi se estimates d tion. The exclus sale. These are rect or indirect	Microchip Tec chemical subs report at semiconducto d cannot guara taterial supplies. In lo not include sive, limited p provided in N , consequentia	chnology tance, if iter box and r devices in intee the ers. Supplier formation is trace levels roduct licrochip's al or	0.97	(mg) Total Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.07

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AICROCHIP Semiconductor Device T	ype: ET 05 (Lead) I	DDPAK (J7)		nation Base A pper Alloy (C			•	ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% I otal							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	526.92	(mg) Total	Mold Compound	% ot Total Weight	26.56
Fused Silica	60676-86-0	Mold Compound	23.373	463.693	233,728		Fused Silica	60676-86-0	88.00	
Epoxy Resin 1	Trade Secret	Mold Compound	0.863	17.125	8,632		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	0.797	15.808	7,968		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.195	23.712	11,952		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.066	1.317	664		Carbon Black	1333-86-4	0.25	
Undeclared	Trade Secret	Mold Compound	0.266	5.269	2,656		Undeclared	Trade Secret	1.00	
Copper	7440-50-8	Lead Frame	70.627	1401.171	706,271	_		Total	100.00	
Tin	7440-31-5	Lead Frame	0.119	2.361	1,190	1430.79	(mg) Total	Lead Frame	% of Total Weight	72.12
Silver	7440-22-4	Lead Frame	1.374	27.257	13,739		Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.071	1.402	707		Tin	7440-31-5	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.017	0.330	167		Silver	7440-22-4	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.003	0.054	27	-		Total	100.00	
Silicon	7440-21-3	Chip (Die)	0.620	12.300	6,200	1.79	(mg) Total	Die Attach	% of Total Weight	0.09
Gold	7440-57-5	Wire Bond	0.040	0.794	400		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.570	11.308	5,700		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	1,983.900	1,000,000	Proprietary	/ Curing agent & Hardener	Trade Secret	3	
	1 9839	g Total Mass						Total	100.00	U
		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH		live) and with	EU	40.00	Total (mg)	Chin (Dia)	% of Total Waight	0.62
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via	a internal design controls				EU	12.30	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	0.62
npliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher prorated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any r	nical substance is NOT a ument, there is no credik regulatory scheme world	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer wide.	, to the best of ntration of the	Microchip Teo	chnology	12.30	,	,		0.62
npliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem rporated's knowledge and belief as of the date of this doc	nical substance is NOT a ument, there is no credik regulatory scheme world nmability standard for pl	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer wide.	, to the best of ntration of the	Microchip Teo	chnology	0.79	,	7440-21-3	100	
npliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher ryporated's knowledge and belief as of the date of this doc , is not below the threshold of regulatory concern for any r ding compounds used by Microchip meet the UL94 V0 flan	nical substance is NOT a ument, there is no credit regulatory scheme world nmability standard for pl plastics/	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t	, to the best of ntration of the o obtain a test	Microchip Teo chemical subs report at	chnology stance, if		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
npliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher ryporated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any r ding compounds used by Microchip meet the UL94 V0 flan ://ul.com/global/eng/pages/offerings/industries/chemicals/ protective "tubes" in which the specific product is shippe	nical substance is NOT a ument, there is no credit regulatory scheme world mmability standard for pl plastics/ d are made from polyvin n this form concerning s of its knowledge and bel s been compiled based o s and some information its and the average weigt	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL IQTM family of databases t yl chloride (PVC) plastic. "Window envelopes" used to he ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technolog n the ranges provided in Material Safety Data Sheets pro may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's a yy Incorporate vided by raw m	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial suppliers. In a suppliers. In	chnology stance, if uter box and r devices in antee the ers. Supplier iformation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
npliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher proprated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any r ding compounds used by Microchip meet the UL94 V0 flan ://ul.com/global/eng/pages/offerings/industries/chemicals/ protective "tubes" in which the specific product is shippe ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information i original packing materials is true and correct to the best inpleteness and accuracy of data in this form because it has rmation is often protected from disclosure as trade secret vided only as estimates of the average weight of these pari	nical substance is NOT a ument, there is no credit regulatory scheme world mmability standard for pl plastics/ d are made from polyvin n this form concerning s of its knowledge and be s been compiled based o s and some information ts and the average weigf silicon devices (silicon lu ranty, express or implied	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In the fanges provided by RoHS in Microchip Technology in the ranges provided in Material Safety Data Sheets pro may not have been provided by subcontract assemblers i t of anticipated significant toxic metals components. The D in the finished parts.	, to the best of ntration of the o obtain a test old the packing y Incorporated's vided by raw m and raw materi use estimates d	Microchip Tec chemical subs report at slip on the ou semiconducto i cannot guara aterial supplie al suppliers. In o not include sive, limited p	chnology stance, if uter box and r devices in antee the ers. Supplier iformation is trace levels roduct		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
npliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher proprated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any r ding compounds used by Microchip meet the UL94 V0 flan //ul.com/global/eng/pages/offerings/industries/chemicals/ protective "tubes" in which the specific product is shippe ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information i r original packing materials is true and correct to the best upleteness and accuracy of data in this form because it has rmation is often protected from disclosure as trade secret vided only as estimates of the average weight of these par opants, metals, and non-metal materials contained within rochip Technology Incorporated does not provide any war ranties provided by Microchip Technology Incorporated ar	nical substance is NOT a ument, there is no credit regulatory scheme world mmability standard for pl plastics/ d are made from polyvin n this form concerning s of its knowledge and bel s been compiled based o s and some information ts and the average weigt silicon devices (silicon lu ranty, express or implied nd its subsidiaries are co anges to Material Conten	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t yl chloride (PVC) plastic. "Window envelopes" used to he ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets pro may not have been provided by subcontract assemblers a to f anticipated significant toxic metals components. The C) in the finished parts. I, with respect to the information provided in this declarat ntained in Microchip's standard terms and conditions of t Declarations and shall not be liable for any damages, di	, to the best of ntration of the o obtain a test old the packing ncorporated's : gy Incorporated vided by raw m and raw materi se estimates d tion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial suppliers. In o not include sive, limited p provided in N , consequentia	chnology stance, if uter box and r devices in antee the ers. Supplier iformation is trace levels roduct licrochip's al or	0.79	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100 100.00 % of Total Weight 100 100.00	0.04

				nation Base A pper Alloy (C	-		Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	e Type: 08 DFN 2x3 m									e3
		"Contained In"	% Total			7.49	(mg) Total	Mold Compound	% ot Total Weight	48
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm					
Silica, fused	60676-86-0	Mold Compound	43.200	6.739	432,000		Silica, fused	60676-86-0	90.0000	
Epoxy Resin	Trade Secret	Mold Compound	2.328	0.363	23,280		Epoxy Resin	Trade Secret	4.85000	
Phenolic Resin	Trade Secret	Mold Compound	2.328	0.363	23,280		Phenolic Resin	Trade Secret	4.85000	
Carbon Black	1333-86-4	Mold Compound	0.144	0.022	1,440		Carbon Black	1333-86-4	0.30000	
Copper	7440-50-8	Lead Frame	44.421	6.930	444,212			Total		
Tin	7440-31-5	Lead Frame	0.114	0.018	1,140	7.11	(mg) Total	Lead Frame	% of Total Weight	45.6
Silver	7440-22-4	Lead Frame	0.869	0.136	8,687		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.082	0.013	821		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.114	0.018	1,140		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.187	0.029	1,872		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.043	0.007	432		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.005	0.001	48			Total		
Heterocyclic organic compound	Trade Secret	Die Attach	0.005	0.001	48	0.04	(mg) Total	Die Attach	% of Total Weight	0.24
Silicon	7440-21-3	Chip (Die)	1.640	0.256	16,400		Silver	7440-22-4	78.00	
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.393	0.061	3,930		Acrylate resins Proprietar		18.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.007	0.001	70		Treated silica	Trade Secret	2.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.120	0.643	41,200		Heterocyclic organic compo	ou Trade Secret	2.00	
101		TOTALS:	100.000	15.600	1,000,000			Total	100.00	
semiconductor device and its homogenous materials	0.0156				· · -	0.26	Total (mg) Doped Silicon	Total Chip (Die) 7440-21-3	% of Total Weight	1.64
s semiconductor device and its homogenous materials cctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.0156 comply with EU Directive	TOTALS: g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH			· · -	0.26		Total Chip (Die)	% of Total Weight	1.64
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d	0.0156 comply with EU Directive : via internal design contro remical substance is NOT ocument, there is no cred	TOTALS: g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concer	S Recast Direc	ctive) and with Microchip Teo	EU	0.26		Total Chip (Die) 7440-21-3	% of Total Weight	0.4
semiconductor device and its homogenous materials of ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f	0.0156 comply with EU Directive : via internal design contro nemical substance is NOT ocument, there is no cred y regulatory scheme worl lammability standard for p	TOTALS: g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concer	IS Recast Direct	ctive) and with Microchip Teo chemical subs	EU		Doped Silicon	Total Chip (Die) 7440-21-3 Total Wire Bond Copper palladium	% of Total Weight 100 100.00	
s semiconductor device and its homogenous materials of sctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this d i, is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	0.0156 comply with EU Directive : via internal design contro nemical substance is NOT ocument, there is no cred y regulatory scheme worl lammability standard for p ls/plastics/	TOTALS: g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concer d-wide.	IS Recast Direct , to the best of ntration of the o obtain a test	ctive) and with Microchip Tee chemical subs report at	EU chnology stance, if		Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd)	% of Total Weight 100 100.00 % of Total Weight	
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemic: protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatio roriginal packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these p	0.0156 comply with EU Directive : via internal design contro nemical substance is NOT ocument, there is no cred y regulatory scheme worl lammability standard for p las/plastics/ ped are made from polyvi n in this form concerning st of its knowledge and b has been compiled based rets and some informatior ratts and the average weig	TOTALS: g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concer d-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology Ir slief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov i may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The	S Recast Direc , to the best of ntration of the o obtain a test old the packing ncorporated's s yy Incorporate vided by raw m	tive) and with Microchip Tec chemical subs report at selip on the ou semiconducto d cannot guara taterial supplie	EU chnology stance, if uter box and r devices in antee the ers. Supplier nformation is		(mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98 2 2]
a semiconductor device and its homogenous materials of sctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), npliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 of c//ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. rorchip Technology Incorporated believes the informatio r original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these p lopants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any v ranties provided by Microchip Technology Incorporate	0.0156 comply with EU Directive : via internal design contro- nemical substance is NOT ocument, there is no cred y regulatory scheme worl lammability standard for p las/plastics/ pped are made from polyvi n in this form concerning st of its knowledge and b has been compiled based rets and some information varts and the average weig in silicon devices (silicon varranty, express or implie	TOTALS: g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concer d-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology Ir slief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov i may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The	IS Recast Direct to the best of ntration of the o obtain a test old the packing ncorporated's : yy Incorporated vided by raw m and raw materi se estimates d	tive) and with Microchip Tec chemical subs report at y slip on the ou semiconducto d cannot guara haterial suppliers. In lo not include sive, limited p	EU chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct		(mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-50-3	% of Total Weight 100 100.00 % of Total Weight 98 2 2]
s semiconductor device and its homogenous materials settive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this da is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemic: protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information rorginal packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these p lopants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any v ranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or	0.0156 comply with EU Directive : via internal design contro- nemical substance is NOT ocument, there is no cred y regulatory scheme worl lammability standard for p ls/plastics/ uped are made from polyvi n in this form concerning st of its knowledge and b has been compiled based rets and some information varts and the average weig in silicon devices (silicon varranty, express or implie and its subsidiaries are c changes to Material Conte te users' reliance on the in	TOTALS: g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concer d-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir blief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarat	IS Recast Direct to the best of ntration of the o obtain a test old the packing ncorporated's : yy Incorporated's : yy Incorporated vided by raw m and raw materi use estimates d sion. The exclusion. These are rect or indirect	tive) and with Microchip Tec chemical subs report at semiconducto d cannot guara aterial supplie al suppliers. In lo not include sive, limited p provided in N , consequentia	EU chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.06	(mg) Total Copper Palladium	Total Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.4

Semiconductor Device	e Type: MF 08 (Lead) DF	N 3x3 mm (A7 / AJ)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	12.20	(mg) Total	Mold Compound	% ot Total Weight	51.24
Silica, fused	60676-86-0	Mold Compound	46.116	10.976	461,160		Silica, fused	60676-86-0	90.00	r
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.485	0.591	24.851	Enox	(Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.485	0.591	24,851	Epon	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.154	0.037	1,537		Carbon Black		0.30	
Copper	7440-50-8	Lead Frame	38.576	9.181	385,763			Total	100.00	2
Tin	7440-31-5	Lead Frame	0.099	0.024	990	9.42	(mg) Total	Lead Frame	% of Total Weight	39.6
Silver	7440-22-4	Lead Frame	0.754	0.180	7,544		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.071	0.017	713		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.099	0.024	990		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.733	0.175	7,332		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.169	0.040	1,692		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.019	0.004	188			Total		
Heterocyclic organic compound	Trade Secret	Die Attach	0.019	0.004	188	0.22	(mg) Total	Die Attach	% of Total Weight	0.94
Silicon	7440-21-3	Chip (Die)	3.610	0.859	36,100		Silver		78	
Gold	7440-57-5	Wire Bond	1.470	0.350	14,700		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 Plati	ng on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.140	0.747	31,400		Treated silica	Trade Secret	2	
		TOTALS:	100.000	23.800	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	
	0.0238 a 1	otal Mass						Total	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified	via internal design controls, su					0.86	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this of	via internal design controls, su hemical substance is NOT an in locument, there is no credible r	upplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity concer	, to the best of	Microchip Tec	hnology	0.86			100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). opliance with the above EU Directives has been verified chemical substance is absent from the list above, the c	via internal design controls, su hemical substance is NOT an in locument, there is no credible r ny regulatory scheme world-wic lammability standard for plasti	upplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity concer le.	, to the best of ntration of the	Microchip Tec chemical subs	hnology	0.86		7440-21-3	100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this c is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 f	via internal design controls, su hemical substance is NOT an in locument, there is no credible r ny regulatory scheme world-wic lammability standard for plastic als/plastics/	upplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity concer le. cs. You can access the UL iQTM family of databases t	, to the best of ntration of the co obtain a test	Microchip Tec chemical subs report at	hnology tance, if		Doped Silicon	7440-21-3 Total	100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this c is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 if //ul.com/global/eng/pages/offerings/industries/chemic: protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic.	via internal design controls, su hemical substance is NOT an in locument, there is no credible r ny regulatory scheme world-wic lammability standard for plasti als/plastics/ oped are made from polyvinyl c	upplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity concer le. cs. You can access the UL iQTM family of databases t hloride (PVC) plastic. "Window envelopes" used to ho	, to the best of ntration of the co obtain a test old the packing	Microchip Teo chemical subs report at g slip on the ou	tance, if tarce, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight 100	1.47
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this c is not below the threshold of regulatory concern for at ding compounds used by Microchip meet the UL94 V0 if //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatic r original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec rided only as estimates of the average weight of these opants, metals, and non-metal materials contained with	via internal design controls, su hemical substance is NOT an in locument, there is no credible r ny regulatory scheme world-wic lammability standard for plasti- als/plastics/ oped are made from polyvinyl c on in this form concerning subs sto of its knowledge and belief, has been compiled based on th rets and some information may parts and the average weight of in silicon devices (silicon IC) ir	upplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity concer- le. cs. You can access the UL iQTM family of databases t hloride (PVC) plastic. "Window envelopes" used to he tances restricted by RoHS in Microchip Technology In as of the date listed in this form. Microchip Technology In as of the date listed in this form. Microchip Technology In a sof the date listed in this form. Microchip Technology In a sof the date listed in this form. Microchip Technology In a sof the date listed in this form. Microchip Technology In the tances provided in Material Safety Data Sheets pro- not have been provided by subcontract assemblers a anticipated significant toxic metals components. The the finished parts.	, to the best of ntration of the o obtain a test old the packing ncorporated's gy Incorporated yided by raw m and raw materi ese estimates c	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara naterial supplie al suppliers. Ir lo not include f	chnology tance, if iter box and r devices in intee the rs. Supplier formation is trace levels		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	1.47
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this c is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V01 ://ul.com/global/eng/pages/offerings/industries/chemic: protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatic or original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec	via internal design controls, su hemical substance is NOT an in locument, there is no credible r yr regulatory scheme world-wic lammability standard for plasti- als/plastics/ oped are made from polyvinyl c en in this form concerning subs sto of its knowledge and belief, has been compiled based on th rets and some information may arts and the average weight of in silicon devices (silicon IC) ir varranty, express or implied, wi I and its subsidiaries are contai changes to Material Content De	upplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity concer- le. 25. You can access the UL iQTM family of databases t hloride (PVC) plastic. "Window envelopes" used to he tances restricted by RoHS in Microchip Technology II as of the date listed in this form. Microchip Technology e ranges provided in Material Safety Data Sheets prov not have been provided by subcontract assemblers a anticipated significant toxic metals components. The the finished parts.	, to the best of ntration of the co obtain a test old the packing ncorporated's y Incorporate vided by raw m and raw materi see estimates o tion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at g slip on the ou semiconductor d cannot guara haterial suppliers. Ir lo not include to sive, limited pri sive, limited pri provided in M	chnology tance, if nter box and r devices in intee the rs. Supplier formation is trace levels roduct licrochip's al or		Cold Gold (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100	1.47
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MICROCHIP Semiconductor Device	ce Type: 08 (Lead) DF	N 4x4x0.9mm (M8)		nation Base A pper Alloy (C	-		Package Home	ogeneous Materials		JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Total			19.20	(mg) Total	Mold Compound	% ot Total Weight	42.76
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	10.20		•		
Silica, fused	60676-86-0	Mold Compound	38.484	17.279	384,840		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	2.074	0.931	20,739		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin Carbon Black	Trade Secret	Mold Compound	2.074 0.128	0.931 0.058	20,739 1.283		Phenolic Resin Carbon Black	Trade Secret 1333-86-4	4.85 0.30	
	1333-86-4	Mold Compound	44,970				Carbon Black			
Copper	7440-50-8	Lead Frame		20.191	449,695			Total		
Iron	7439-89-6	Lead Frame	1.106	0.497	11,061	21.13	(mg) Total	Lead Frame	% of Total Weight	47.07
Silver	7440-22-4	Lead Frame	0.897	0.403	8,967		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.059	0.026	588		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.039	0.017	388		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.889	0.399	8,892		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.234	0.105	2,340		Phosphorous	7723-14-0	0.08	
Copper	7440-50-8	Die Attach	0.047	0.021	468			Total	100.00	
Silicon	7440-21-3	Chip (Die)	5.470	2.456	54,700	0.53	(mg) Total	Die Attach	% of Total Weight	1.17
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.314	0.141	3,144		Silver	7440-22-4	76.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.006	0.003	56		Epoxy resin	Trade Secret	20.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.210	1.441	32,100		Copper	7440-50-8	4.00	
				44.900	1.000.000				100.00	-
		TOTALS:	100.000	44.300	1,000,000			Total	100.00	
	s comply with EU Directive 2	TOTALS: g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH			,,	2.46	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	5.47
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verifie chemical substance is absent from the list above, the	s comply with EU Directive 2). d via internal design contro chemical substance is NOT	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and,	S Recast Direct	tive) and with Microchip Teo	EU	2.46	Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight	0.32
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive ppliance with the above EU Directives has been verifie chemical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0	s comply with EU Directive 2). d via internal design contro chemical substance is NOT document, there is no credi any regulatory scheme work flammability standard for p	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer	S Recast Direct to the best of the tration of the best of the tration tration tration trating transmission t	tive) and with Microchip Tec chemical subs	EU		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd)	% of Total Weight 100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive, mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the orporated's knowledge and belief as of the date of this it, is not below the threshold of regulatory concern for a diding compounds used by Microchip meet the UL94 V0 o//ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sh	s comply with EU Directive 2). d via internal design contro chemical substance is NOT document, there is no credi any regulatory scheme work flammability standard for p cals/plastics/	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. un intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- -wide.	S Recast Direct to the best of stration of the o o obtain a test	tive) and with Microchip Teo chemical subs report at	EU chnology stance, if		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium	% of Total Weight 100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the <i>i</i> orporated's knowledge and belief as of the date of this <i>j</i> , is not below the threshold of regulatory concern for a liding compounds used by Microchip meet the UL94 V0 p://ul.com/globai/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is sh tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informati ir original packing materials is true and correct to the b mpleteness and accuracy of data in this form because be ormation is often protected from disclosure as trade se	comply with EU Directive 2). d via internal design contro chemical substance is NOT document, there is no credi any regulatory scheme work flammability standard for p cals/plastics/ ipped are made from polyvi ion in this form concerning : east of its knowledge and be t has been compiled based crets and some information parts and the average weig	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concern -wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lef, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	S Recast Direct to the best of tration of the o b obtain a test Id the packing corporated's s y Incorporated ided by raw m and raw materia	tive) and with Microchip Tec chemical subs report at slip on the ou semiconducto I cannot guara aterial suppliers. Ir	EU chnology stance, if uter box and r devices in antee the ers. Supplier iformation is		Doped Silicon (mg) Total Copper	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98 2	
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Total 100.00 Total	Semiconductor Device	• Type: MF 8 (Lead) D) FN-S 6x5 mm (A6 / AW)		nation Base A pper Alloy (C	-		•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Ster. Inset Top/74-00 Mode Compound 24.50 1500 42000 Female M2 # 2000.03 Bigon Particle Blain Task Storm Add Compound 2.82 1.820 2.827 1.820 2.827 Prescript Blain Task Storm Add Compound 2.82 1.820 2.827 1.820 2.827 Compared Task Storm Add Compound 2.82 1.820 2.827 1.820 2.827 Tim Trick 10.71 1.820 5.83 4.86 1.82 2.827 1.82 1.82 2.827 1.82		CAC Number					37.77	(mg) Total	Mold Compound	% ot Total Weight	49.12
Epop Rein (NP = 500.0336) Task Sore Model Company 2.382 Task 2.382 Task Product Reside Product Reside 4.86 Company 7440-034 Loss Frame 0.130 1.82 2.283 1.82 2.283 1.82 2.283 1.82 2.283 1.82 2.283 1.82 2.283 1.82 2.283 1.82 2.283 1.82 2.283 1.82 2.283 1.82 2.283 1.82 2.283 1.83<			•	•				0.11	00070.00.0	00.00	
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$ \frac{Coport}{In} + \frac{Va40}{400} \frac{Va40}{1400} \frac{Va40}{1400$											
$\frac{\ln n}{2} + \frac{1}{2} + $								Carbon Black		0.00	1
Silver 7440-02-4 Lead Frame 0.646 6.401 The second seco						- 1		() = ()			
$ \frac{2 nc}{0.0000} \frac{7 440 \times 666}{0.0000} \frac{1}{7 440 \times 616} \frac{1}{0.000} \frac{1}{0.0000} \frac{1}{0.0000} \frac{1}{7 440} \frac{1}{0.0000} \frac{1}{0.0000}$							33.91				44.1
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Acrystar entains Proprietary Trade Secret Die Attach 0.074 0.075 738 Chromum 7440473 0.25 Heterocyclic organic compound Trade Secret Die Attach 0.0068 6.2 0.32 (mg) Total Die Attach 5, of Total Weight 0.41 Glob 7440273 Chromum Trade Secret 10 76 100.000 7440274 76 100.000 7440274 76 100.000 7440274 76 100.000 76.33 1700 1701 126 1701 126 126 126 100.000 76.300 1.000,000 76.300 1.000,000 100.											4
Trade Secret Die Attach 0.006											4
Heterocyclic organic compound Trade Secret Die Attach 0.006 0.206 82 0.32 (mg) Teal Die Attach % of Total Weight 0.41 Glid 7440-57.5 Wire Bond 0.170 0.131 1.700 Name Nam Name Name								Chromium			Į
Silton 7440-21-3 Chip (Die) 2.870 2.870 Silton Silton 7440-22-4 78 Gold 7440-27-5 Platry on estmatiskic proj- tana Platry on estmatiskic proj- tana 100.000 1.000.000											
Gold 7440-57.5 Wite Bord 0.170 0.131 1,700 Tn 7440-37.5 Paugion seteral lastic (proj - Mains Tr / arreside at 150°C 101 hour 3333 3.333 2.51 3.330 2.01 TOTALS: 100.000 76.900 1,000,000 Semiconductor device and its homogenous materials computy with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2017/65/EU (RoHS Recast Directive) and with EU 2.21 Total (mg) Chip (Die) % of Total Weight 2.67 Method Secret 1 Control Line as the secret in the							0.32	(mg) Total	Die Attach	% of Total Weight	0.41
Tin Treated alled											
TOTALS: 100.000 76.900 1,000,000 DATE 9 g Total Mass Semiconductor device and its homogenous materials scomply with EU Directive 2002/95/EC (RoHS Directive); EU Directive); EU Directive 2011/55/EU (RoHS Recast Directive) and with EU 2.21 Total (mg) Chip (Die) % of Total Weight 2.87 pilance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Chemical substance is absent from the list above, the chemical substance is not entitied to entitie cancer, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substances. If ding compounds with the gene of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substances. If ding compounds weeds with combine the set of Microchip Technology incorporated Kewical Substances. If ding compounds meter is no credible reason to believe that the unavoidable impurity concentration of the chemical substances. If ding compounds meter is no credible or passies. You can access the UL IQTM family of databases to obtain a test report at the chemical substances. If ording compounds materials structures and correct to the best of His knowledge and believe the information in this form. Chrochip Technology Incorporated Secure and correct to the best of His knowledge and believes the information in any on tave been provided by Microchip Technology Incorporated secrets and soma num on tave been provided by subscince that secrets and soma num on tave been provided by subscince that secrets and soma and complete directives (selicino IC) in the finished pars. Control With Recurst assembles and areremetral ascinalization. The exclusive, limited produ								Acrylate resins Proprietary		18	
Output Total Total <t< td=""><td>Tin</td><td>7440-31-5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td></t<>	Tin	7440-31-5								2	
Semiconductor device and its homogenous materials comply with EU Directive 2002/SEC (End-of-Life Vehicles (ELV) Directive). Chip (Die) % of Total Weight 2.87 mpliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Doped Silicon 7440-21-3 100.00 is not below the threshold of regulatory concentration for any regulatory scheme verify with eu navoidable impurity concentration of the chemical substance is no redible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not below the threshold of regulatory concentration of the chemical substance is absent from the list above, the chemical substance is no redible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not below the threshold of regulatory concentration of the chemical substance is absent from PVC plastic. 0.13 (mg) Total Wire Bond % of Total Weight 0.17 ViulL com/global/			TOTALS:	100.000	76.900	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	
s emiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU cetive 2002/53/EC (End-of-Life Vehicles (ELV) Directives. Total (mg) Chip (Die) % of Total Weight 2.87 Doped Silcon 7440-21-3 100 Total 100.00 Total 100.00		0 0769 /	n Total Mass						Total	100.00	
Outcome autority and autore and autority and autority and autority and autority and autorit							2.21	Total (mg)	Chip (Die)	% of Total Weight	2.87
0://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ 0.13 (ing) Total Wire Bond % of Total Weight 0.17 0://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ 0.13 (ing) Total Wire Bond % of Total Weight 0.17 0://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ 0.13 (ing) Total Wire Bond % of Total Weight 0.17 0://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ 0.13 (ing) Total Wire Bond % of Total Weight 0.17 vib/out metals in "respination is of the average weight of anticipated significant toxic metals components. These estimates and accuracy of data in this form box as testimates of the average weight of anticipated significant toxic metals components. These estimates do not include trace levels Image: Supplier information provided in Microchip's standard terms and conditions of sale. These are provided by Microchip's technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's termovices. 2.56 (ing) Total Plating on external leads (pins) - Matte Tin / anneeled at 150°C for 1 / bour rochip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's of Total Weight 3.33 rochip Te		via internal design controls	s, supplier declarations, and /or analytical test data.				2.21	,	,		2.87
Lain "reels" may be made from PVC plastic. Doped Gold 7440-57-5 100 Total Doped Gold 7440-57-5 100 Total Total 100.00 T	mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this d y, is not below the threshold of regulatory concern for an	nemical substance is NOT a ocument, there is no credik y regulatory scheme world	n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer- wide.	ntration of the	chemical subs		2.21	,	7440-21-3	100	
rochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in ir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's semiconductor devices in proleteness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. Supplier suppleteness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. Information is vided only as estimates of the average weight of inticipated significant toxic metals components. These estimates do not include trace levels topants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. rochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or erwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or his Certificate of Compliance for semiconductor products.	mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this d y, is not below the threshold of regulatory concern for an Iding compounds used by Microchip meet the UL94 V0 fi	nemical substance is NOT a ocument, there is no credit y regulatory scheme world lammability standard for pla	n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer- wide.	ntration of the	chemical subs			Doped Silicon	7440-21-3 Total	100 100.00	
Tranties provided by Microphyticate does not provide any warranty, express or implied, with respect to the information provide in this declaration. The exclusive, initiate product 2.56 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour % of Total Weight 3.33 tranties provide by Microphyticate does not provide any warranty, express or implied, with respect to the information provide in this declaration. The exclusive, initiate product 2.56 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour % of Total Weight 3.33 tranties provide by Microphyticate does not provide any warranty, express or implied, with respect to the information provide any microphyticate in this declaration. The exclusive, initiate product 2.56 (mg) Total leads (pins) - Matte Tin / hour % of Total Weight 3.33 tranties provide by Microphyticate does not provide any warranty, express or implied, with respect to the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5 100.00	ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this d uy, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl tp://ul.com/global/eng/pages/offerings/industries/chemica	nemical substance is NOT a ocument, there is no credit y regulatory scheme world lammability standard for pla lls/plastics/	n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer wide. astics. You can access the UL iQTM family of databases t	ntration of the	chemical subs	stance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.17
erwise, suffered by users or third party test reports (SGS) or Tin 7440-31-5 100.00	sompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this d y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl tp://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship intain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatio eir original packing materials is true and correct to the be impleteness and accuracy of data in this form because it I formation is often protected from disclosure as trade secre ovided only as estimates of the average weight of these p	nemical substance is NOT a ocument, there is no credit y regulatory scheme world lammability standard for pla is/plastics/ ped are made from polyvin n in this form concerning s st of its knowledge and bel has been compiled based o rets and some information i rats and the average weigh	n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In fef, as of the date listed in this form. Microchip Technolog n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	htration of the o obtain a test old the packing ncorporated's yy Incorporate vided by raw m and raw materi	chemical subs report at slip on the ou semiconducto d cannot guara aterial supplie al suppliers. Ir	stance, if uter box and r devices in antee the ers. Supplier nformation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.17
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	mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this d y, is not below the threshold of regulatory concern for an iding compounds used by Microchip meet the UL94 V0 fl p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information is often protected from disclosure as trade sec voided only as estimates of the average weight of these p dopants, metals, and non-metal materials contained with crochip Technology Incorporated does not provide any w rranties provided by Microchip Technology Incorporated ottations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or of erwise, suffered by users or third parties as a result of the	nemical substance is NOT a ocument, there is no credit y regulatory scheme world lammability standard for plu is/plastics/ ped are made from polyvin n in this form concerning s st of its knowledge and bel has been compiled based o rets and some information i arts and the average weigh in silicon devices (silicon lu varranty, express or implied and its subsidiaries are co changes to Material Conten ne users' reliance on the inf	n intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In fer, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts. I, with respect to the information provided in this declarat ntained in Microchip's standard terms and conditions of a t Declarations and shall not be liable for any damages, dii	ntration of the o obtain a test old the packing ncorporated's y Incorporated y Incorporated se estimates of ion. The exclu sale. These are rect or indirect	chemical subs report at y slip on the ou semiconducto d cannot guare al suppliers. Ir lo not include sive, limited pi provided in N , consequentia	stance, if uter box and r devices in antee the rs. Supplier nformation is trace levels roduct licrochip's al or	0.13	(mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00	0.17

pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. hemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology proprated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not below the threshold of regulatory concern for any regulatory scheme world-wide. Ing compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ///.com/global/eng/gages/offerings/industries/chemicals/plastics/ protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in "reels" may be made from PVC plastic. Succent Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated cannot guarantee the pleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Morpmation is fielded only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels poparts, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Suchip Technology Incorporated does not provided any warranty, express or implied, with respect to the information provided by Microchip's standard terms and conditions of sale. These are provided in Microchip's tandard terms and conditions of sale. These are are provided in Microchip's tandard terms and conditions of sale. These are provided in Microchip's tandard	Semiconductor Device	Type: MF 10 (Lead	DFN 3x3 mm (E2 / EJ)		nation Base A pper Alloy (C				ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Lab Lab Lab Control Product Product <th></th> <th> I</th> <th>"Contained In"</th> <th>% I otal</th> <th></th> <th></th> <th>40.05</th> <th></th> <th></th> <th></th> <th></th>		I	"Contained In"	% I otal			40.05				
Epsoy Ream (NUP # 500/130-5) Tatle Sector Mold Compound 3.927 0.938 93/266 Cherolic Ream 1746/50-1 Mold Compound 3.927 0.938 93/266 Cherolic Ream 1746/50-1 Mold Compound 3.547 0.836 93/266 Cherolic Ream 1746/50-1 Mold Compound 3.547 0.837 93/266 Non 1746/50-1 Leas Finam 0.071 0.071 777 777 777 777 777 777 777 776 746-50-1	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	19.35	(mg) Total	Mold Compound	% ot Total Weight	80.96
Phenols Real Table Storm Model Compound 33.827 03.88 93.266 Calorin Black 133.844 Model Compound 13.847 0.058 20.26 Claim 133.844 Model Compound 13.847 0.058 20.26 Claim 143.844 Model Compound 0.037 0.037 772 0.09 702 0.00<	Silica, fused	60676-86-0	Mold Compound	72.864	17.414	728,640		Silica, fused	60676-86-0	90.00	
Carbon Black 1333-86-1 Model Compound 0.243 0.058 2.429 Carbon Black 1333-86-1 0.000 10							Epox				
Copyer 7449 50.6 Last Frame 0.544 0.447 0.547 0.69 (mm) Total 1000 Shart 7439 586 Least Frame 0.071 0.071 707 Env 1449 52.4 151 0.017 707 Env 1449 52.4 0.017 707 100 100 0.017 707 100 100 0.017 707 100 100 0.017 707 100 100 0.017 707 100 100 0.017 100 100 0.017 100 100 100 0.017 100 100 100 0.000 100										4.85	
$ \frac{ 10n }{ 10n } = \frac{1938}{ 10n } \frac{1938}{ 10n } \frac{1}{ 10n } 1$	Carbon Black		Mold Compound					Carbon Black	1333-86-4	0.30	
Silver 7440-22-4 Load Frame 0.071 0.071 707 Zinc 7440-22-4 Load Frame 0.005 0.001 48 Progitarious 7723-14-0 Load Frame 0.003 0.001 41 Arrysta resina Propriatory Trade Secter De Atash 0.013 0.003 126 Trade Secter De Atash 0.013 0.003 126 100 7440-224 1.9 Heteropolic organic Compound Trade Secter De Atash 0.013 0.003 126 105 fmol Total De Atash 5.013 0.003 126 106.000 1060.000 1060.000 1060.000 1060.000 1060.000 1060.000 1060.000 1060.000 106.000	Copper		Lead Frame	3.544	0.847	35,444			Total	100.00	
Zinc7460-06-0Lead Frame0.0050.00145Properturious1723-16-0Lead Frame0.0050.00145Acyutar resta Properturiay17ab SecritDe Attach0.0130.003126Heterocyclic organic compoundTrads SecritDe Attach0.0130.003126Silcon7460-015De Attach0.0130.003126Silcon7460-015De Attach0.0130.003126Silcon7460-015De Attach0.0130.003126Silcon7460-015De Attach0.0130.003126Silcon7460-015De Attach0.0130.003126Silcon7460-015De Attach5.0 Fod Weiget0.80MicrophyTotal SilconTotal Silcon100.001.80Silcon7460-015Directive No.0001.801.80Directive No.0000Directive No.000021.8001.801.80Directive No.0000SilconTotal100.001.80Directive No.0000Directive No.000021.8001.801.80Directive No.00000SilconTotal100.001.80Directive No.000000SilconTotal100.001.80Directive No.0000000SilconTotal1.801.80Directive No.000000000000000000000000000000000000	Iron		Lead Frame	0.087	0.021	872	0.89	(mg) Total	Lead Frame	% of Total Weight	3.71
Proception7723 140Lead Frame0.00131Silver7440 224Dia Alach0.4810.1714.014Acytar reinn Propriativ1763 ScortDie Alach0.1130.001116Heteropic organic7740 213Die Alach0.1130.003106Cold7440 213Die Alach0.0131000106Cold7440 213Chip (Die)9.200221322.001000Tin7440 21478Wite Bond100146.200Tin7440 215Purgo external bacis (part i arreada at 100° C for too4.2021.10446.200To 2023 G Total MassToral100.0001068.2001.0000Cola organic companyToral 100.000Cola organic companyToral 100.000Toral 100.000Toral 100.000Colspan="2">Col	Silver	7440-22-4	Lead Frame	0.071	0.017	707		Copper	7440-50-8	95.54	
Silver 7440 524 Die Attach 0.431 0.117 4,914 Arrythar resine Populary Trade Secret Die Attach 0.113 0.002 1,12 4,914 Trade Secret Die Attach 0.013 0.003 128 Trade Secret 0.000 Biotry Compound Trade Secret Die Attach 0.013 0.003 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 0.000 128 1000.00 128 100.00 128 100.00 128 128 128 128 128 128 100.00 128 100.00 128 128 128 128 128 128 100 128 128 1	Zinc	7440-66-6	Lead Frame	0.005	0.001	46		Iron	7439-89-6	2.35	
Acytate reside Trade Secret Die Attach 0.113 0.027 1.134 Progehous Trade Secret 0.08 Heterocycle organic compound Trade Secret Die Attach 0.013 0.003 1.26 0.15 0.08 1.06 1.08	Phosphorous	7723-14-0	Lead Frame	0.003	0.001	31		Silver	7440-22-4	1.91	
Treated silica Trade Secret Die Attach 0.013 0.003 126 Trade Trade 100.00 Heteroyckic organic compound 7440-21-3 Chip (Die) 9.260 2.213 92.600 92.60 92.713 92.600 92.60 92.713 92.600 92.60 92.600 92.600 92.60 92.600 92	Silver	7440-22-4	Die Attach	0.491	0.117	4,914		Zinc	7440-66-6	0.13	
Heterocyclic organic compound Trade Secret Die Attach 0.013 0.03 126 0.16 (mig) Total Die Attach % of Total Weight 0.63 Gold 7440-2743 Chip (Die) 9.200 0.180 8.200 Im Silver 7440-224 78 Gold 7440-57.5 Puing on external leads (print) 100 462.00 TOTALS: 100.000 2.33.90 1,000 462.00 Total 100 Total Secret 1.8 eemiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoH5 Directive). EU Directive 2017/95/EU (RoH5 Recast Directive) and with EU 2.21 Total 100.00 100.00 printed substance is absent from the liss above, the chemical substance is no trability reason to believe that the unavoidable imputy concentration of the chemical substance, if Silcon 740-21-3 100 100.00<	Acrylate resins Proprietary	Trade Secret	Die Attach	0.113	0.027	1,134		Phosphorous	7723-14-0	0.08	
Silicon 7440-21-3 Chip (Dip) 9.280 2.213 92.800 Silicon 7440-21-3 785 Gloid 7460-51-5 Putting on external last grant- Matter Structure 4.520 1.104 48.200 1.004 1.000 22.1 Total 1.000 1.000 22.1 Total 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 <td>Treated silica</td> <td>Trade Secret</td> <td>Die Attach</td> <td>0.013</td> <td>0.003</td> <td>126</td> <td></td> <td></td> <td>Total</td> <td>100.00</td> <td></td>	Treated silica	Trade Secret	Die Attach	0.013	0.003	126			Total	100.00	
Silicon 7440-21-3 Chip (Dip) 9.280 2.213 92.800 Silicon 7440-21-3 785 Gloid 7460-51-5 Putting on external last grant- Matter Structure 4.520 1.104 48.200 1.004 1.000 22.1 Total 1.000 1.000 22.1 Total 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 <td></td> <td></td> <td></td> <td>0.013</td> <td>0.003</td> <td></td> <td>0 15</td> <td>(mg) Total</td> <td></td> <td>% of Total Weight</td> <td>0.63</td>				0.013	0.003		0 15	(mg) Total		% of Total Weight	0.63
Gold 7440575 Wire Bord 0.820 0.186 8.200 Tin 7440575 Pileg on external lass (pm) - Mine Tin Janeable at 150°C tor 1 hour 46.201 1.040.000 23.900 1.000,000 Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/95/EU (RoHS Recast Directive) and with EU 2.21 Total Total 100.000 Joint 2002/95/EC (RoHS Directive), EU Directive 2002/95/EC (RoHS Directive), and vita a terman langer devine in the sension to believe that the unavoidable impurity concentration of the best of Microchip Technology in terma design controls, supplier declarations, and /or analytical test data. Silicon 7440-21-3 100 Void 100,000 Void 100,000 Silicon 7440-21-3 100 Void 100,000							0.10				0.00
Tin 7440-31 S Parage on element leads (proj.) Mains Thr / anvaulted at 150°C for 1 too 462:00 1.104 462:00 Total Total Total State 0.0239 g Total Mass ToTALS: 100.000 1.000,000 Total Total 100:000 semiconductor devices and its homogenous materials comply with EU Directive 2002/59/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 2:1 Total (mg) Chip (Die) % of Total Weight 5:26 parades discussed to with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Silcon 7:44:0:1:3 100:00 parades for meet he UL34V Differences in a credible reason to believe that the unavoidable impurity concentration of the chemical substance is no credible reason to believe that the unavoidable impurity concentration of the chemical substance. Silcon 7:44:0:21:3 100:00 protective "Lubes" In which the specific product is shipped are made from polyvinyl choride (PVC) plastic. "Window envelopes" used to hold the packing silp on the outer box and for analytical test displication in the state and correct to the set of its Knowledge and belief as of the data listing siles or the average weight of anticipated significant toxic metals components. These estimates do not include trace levels 0.20 (mg) Total Wire Total Weight											
Outcome TOTALS: TOTALS: TOTALS: TOTALS: TOTALS: TOTALS: TOTALS: TOTALS: Total Total <tht <="" http:="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tht>											
Output devices and its homogenous materials comply with EU Directive 2002/35/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU directive 2002/35/EC (RoHS Directive), pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Silcon 7440-21-3 100 Total 100.00 Total 100.00 100	101	1440 01 0					Hoto				
semiconductor device and its homogenous materials comply with EU Directive 2002/39/EC (RoHS Directive), EU Directive 2017/85/EU (RoHS Directive) and with EU trive 2002/31/EC (End-d-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. hemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology prorated knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not below the threshold of regulatory concern for any regulatory scheme world, wide. If our of any regulatory scheme world, belief as of the date of this document, there is no concluse restricted by RoHS in Microchip Technology protective "Lubes" with weight was and from PUC plastic. Total Weight 0.82 (mg) Total Wire Bond % of Total Weight 0.82 (mg) Total 0.00 (mg) Total Wire Bond % of Total Weight 0.82 (mg) Total 0.00 (mg) To		0.0000		100.000	23.300	1,000,000	Tiele	locyclic organic compound		=	
the 2002/SJEC (End-of-Life Vehicles (ELV) Directive). Total matching of the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. hemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology protect's knowledge and believ that the unavoidable impurity concentration of the chemical substance, if is not bedow the threshold of regulatory concern for any regulatory scheme world-wide. Ing compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <i>Microchip Technology</i> incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology incorporated semiconductor devices in in "reels" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing suppliers. Suppliers suppliers suppliers suppliers in this form concerning substances restricted by RoHS in Microchip Technology incorporated semiconductor devices in a test report at <i>Microchip Technology</i> incorporated believes the information may not have been provided by subcontract assemblers and raw material suppliers. Suppliers. Suppliers as rade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Suppliers are rade secrets and some information may not have been provided by standard terms and conditions of sale. These are provided in Microchip Technology incorporated dees not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's termology incorporated and bis substance in Microchip's standard terms and conditions of sale			V								
Interview of the set of the	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		, p		,		2.21		,		9.26
hemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Image: Computed Stands and Stands	npliance with the above EU Directives has been verified	via internal design control	s, supplier declarations, and /or analytical test data.					Silicon	7440-21-3	100	
/////.Com/global/eng/gages/orterings/industries/chemicals/plastics/ Com/global/eng/gages/orterings/industries/chemicals/plastics/ protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in "reets" may be made from PVC plastic. Gold 7440-57-5 100 in "reets" may be made from PVC plastic. Total 100.00 Total 100.00 original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the pleteness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets on the average weight of inticipated significant toxic metals components. These estimates do not include trace levels portice by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's atoms, sales order acknowledgement, and invoices. 1.10 (mg) Total Plating on external leads (pins) - Mater Tin / analed at 150°C for 1 / hour wise, suffree by users or third paties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or is certificate of Compliance for semiconductor p	orporated's knowledge and belief as of the date of this d , is not below the threshold of regulatory concern for an Iding compounds used by Microchip meet the UL94 V0 fl	ocument, there is no credi y regulatory scheme work ammability standard for p	ble reason to believe that the unavoidable impurity concerned and the second seco	ntration of the	chemical subs		0.20	(mg) Total	Wire Bond	% of Total Weight	0.82
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Occinity technology incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, initiated product 1.10 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour % of Total Weight 4.62 anties provided by Microchip Technology incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's 1.10 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 / hour % of Total Weight 4.62 ochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or rwise, suffered by users or third party test reports (SGS) or is Certificate of Compliance for semiconductor products. Tin 7440-31-5 100.00	tain "reels" may be made from PVC plastic.			old the packing	slip on the o	uter box and		Gold			
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Semiconductor Devices Type: With 00 stability Contained in the second s					nination Base Copper Alloy				ogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Basic Substance CAS Number Sub-Component Winght Applie Dist Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Number Numb	Semiconductor Devi	ce Type: MF 08 (pin) P									0
$\frac{816a}{1000} \frac{8xc}{1000} \frac{800}{1000} $	Pagia Substance	CAS Number			malaart		56.97	(mg) Total	Mold Compound	% ot Total Weight	54.4
$\frac{1}{10000} \frac{1}{10000} \frac{1}{10000} \frac{1}{100000} \frac{1}{1000000} \frac{1}{10000000} \frac{1}{100000000} \frac{1}{100000000000} \frac{1}{10000000000000000000000000000000000$			-	•	0.			Cilico fuend	60676.96.0	-	
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$\frac{1}{10} \frac{1}{10} \frac$	Carbon Black	1333-86-4	Mold Compound	0.163	0.171	1,632		Carbon Black			
$\frac{8 \text{ More}}{2 \text{ More}} + \frac{746 324}{1000} + \frac{1000}{1000} + \frac{1000}{1000}$	Copper	7440-50-8	Lead Frame	16.394	17.168	163,942			Total	100.00	
$\frac{1}{10000000000000000000000000000000000$							17.97	(mg) Total	Lead Frame	% of Total Weight	17.16
$\frac{Progetorous}{200} = \frac{772140}{200} = \frac{1000}{1000} 1$											
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Tm Tell <	Doped Gold	7440-57-5	Wire Bond	0.830	0.869	8,300				100.00	
Output	Tin	7440-31-5 P	9				7.18	(mg) Total		% of Total Weight	6.86
emicrotice of the homogenous materials comply with EU Directive 30029EC (RoHS Directive) uses EU-RoHS application exemption 7(a): Lead in high melting entruct type 30ders (Le. leak-back and thosys containing 8(8%) weight or more lead. bilance with the above EU Directives has been verified via internal design controls, supplier declarations, and <i>for</i> analytical test data. which a labetance is absent from the lite above, the chemical substance is not contable reason to believe that the unavoidable impurity concentration of the chemical substance, if any below the threshold of regulatory concern for any regulatory scheme world-wide. ng compounds used by Microchip meet the UL94 V0 fianmability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at lucorrigiobal engages/offering/microline scheme high decision in this form. Concerning substance is restricted by RoHS in Microchip Technology Incorporated's konvidega and belief as of the date of this dowide list in the specific product is shipped are made from polyinyl choirde (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and rivers' may be made from PVC plastic. diverse in the specific product is shipped are made from polyinyl choirde (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and rivers' may be made from PVC plastic. diverse in the specific product is shipped are made from polyinyl choirde (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and riverses of the accer wight of the specific product is shipped are made from polying by subcortize assemblers and raw material supplies. Normation in the specific product as and be average weight of diffectional Step Data Sheets perification and the accert assemblers and raw material supplies. Normation is def on a scientize of the kees of the kees of the kees of the kees of the step weight of diffection for the detate of the date of this detate as on the information may not				100.000	104.720	1,000,000			7439-92-1	92.50	
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bilance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. termical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology portact's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any in concern for any regulatory scheme world-wide. Ing compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at UL compliqueble/pages/offerings/mdustries/schemicals/plastics/ more the "in which the specific product is shipped are made from polyinyt choride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and "reas" may be made from PVC plastic. Total Total Total Total Total Use on the average weight of the set of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated can turn average weight of anticipated slignificant toxic metales components. These estimates do not include trace levels the average weight of the average weight of anticipated slignificant toxic metales components. These are provided in Microchip's tenderology Incorporated and Its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's tenderology Incorporate and the uverage weight of anticipated slignificant toxic metals components. These are provided in Microchip's tenderology incorporate and the uverage weight of anticipated slignificant toxic metals complement which are average weight of anticipated slignificant toxic metals complements. These are provided in Microchip's tenderology incorporated and its usubsidiaries are contained of the uvera's reliance on the information micro in Material Content Declarations (MCD) or indepen	semiconductor device and its homogeneus materials	comply with FU Directive 200	0/0E/EC (BollS Directive) uses EU BollS application even		I a a d las le las la se						
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Inities provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's by Microchip's by Microchip technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's by Microchip's by Microchip technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's by Contained and the subsidiaries are contained in Microchip's are contained in Microchip's are contained in Microchip's and the subsidiaries are contained in Microchip's are contained in Microchip's of the service of t	erature type solders (i.e. lead-based alloys containing pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this t below the threshold of regulatory concern for any re ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemi	g 85% by weight or more lead. d via internal design controls, s chemical substance is NOT an document, there is no credible egulatory scheme world-wide. flammability standard for plas cals/plastics/	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and, t reason to believe that the unavoidable impurity concent tics. You can access the UL iQTM family of databases to	to the best o ration of the obtain a tes	of Microchip Te e chemical sub at report at	cchnology stance, if any,	3.45	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight 100	3.29
Construction and shall not be name for any states of the larges to material content bectarations and shall not be name for any states of the larges, unex of many states of the larges of the lar	erature type solders (i.e. lead-based alloys containing plance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this t below the threshold of regulatory concern for any re ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemio portective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the information original packing materials is true and correct to the b loteness and accuracy of data in this form because is mation is often protected from disclosure as trade se ded only as estimates of the average weight of these	g 85% by weight or more lead. d via internal design controls, : chemical substance is NOT an document, there is no credible gulatory scheme world-wide. flammability standard for plas cals/plastics/ ipped are made from polyvinyl ion in this form concerning sub test of its knowledge and belief t has been compiled based on crets and some information ma parts and the average weight of	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and, t reason to believe that the unavoidable impurity concent tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to hol stances restricted by RoHS in Microchip Technology inc , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provi y not have been provided by subcontract assemblers ar of anticipated significant toxic metals components. Thes	to the best o ration of the obtain a tes d the packin corporated's i Incorporate ded by raw r d raw matei	of Microchip Te e chemical sub at report at g slip on the c s semiconduct d cannot gua material suppliers.	schnology stance, if any, uter box and or devices in rantee the iers. Supplier information is		(mg) Total	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
2.49 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour % of Total Weight 2.38 Tin 7440-31-5 100.00	erature type solders (i.e. lead-based alloys containing pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the i porated's knowledge and belief as of the date of this t below the threshold of regulatory concern for any re- ing compounds used by Microchip meet the UL94 VO //ul.com/global/eng/pages/offerings/industries/chemic portective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the information origianal packing materials is true and correct to the bioleteness and accuracy of data in this form because i boleteness and accuracy of data in this form because i edided only as estimates of the average weight of these inpants, metals, and non-metal materials contained will pochip Technology Incorporated does not provide any	g 85% by weight or more lead. d via internal design controls, s chemical substance is NOT an document, there is no credible agulatory scheme world-wide. flammability standard for plas cals/plastics/ ipped are made from polyvinyl ion in this form concerning sub test of its knowledge and belief t has been compiled based on crets and some information ma parts and the average weight t thin silicon devices (silicon IC) warranty, express or implied, v	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and, t reason to believe that the unavoidable impurity concent tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to hol stances restricted by RoHS in Microchip Technology Inc , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provi y not have been provided by subcontract assemblers ar of anticipated significant toxic metals components. Thes in the finished parts.	to the best o ration of the obtain a tes obtain a tes orporated's Incorporate ded by raw n draw mate e estimates	f Microchip Te e chemical sub at report at g slip on the c semiconduct d cannot gua material suppliers. do not include usive, limited	schnology stance, if any, uter box and or devices in rantee the lers. Supplier information is trace levels		(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	
	erature type solders (i.e. lead-based alloys containing pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the of porated's knowledge and belief as of the date of this t below the threshold of regulatory concern for any re- ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the informati- original packing materials is true and correct to the b leteness and accuracy of data in this form because i mation is often protected from disclosure as trade se ided only as estimates of the average weight of these ipants, metals, and non-metal materials contained wit ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporate ations, sales order acknowledgement, and invoices.	g 85% by weight or more lead. d via internal design controls, i chemical substance is NOT an document, there is no credible agulatory scheme world-wide. flammability standard for plas cals/plastics/ ipped are made from polyvinyl ion in this form concerning sub test of its knowledge and belief thas been compiled based on i crets and some information ma parts and the average weight of thin silicon devices (silicon IC) warranty, express or implied, w id and its subsidiaries are cont the users' reliance on the infor	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and, t reason to believe that the unavoidable impurity concent tics. You can access the UL IQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to hole stances restricted by ROHS in Microchip Technology Ind , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provi y not have been provided by subcontract assemblers ar of anticipated significant toxic metals components. Thes in the finished parts. with respect to the information provided in this declaration ained in Microchip's standard terms and conditions of so Declarations and shall not be liable for any damages, dire	to the best o ration of the obtain a tes d the packin corporated's ded by raw i d raw matei e estimates on. The exclu ale. These ar	of Microchip Te e chemical sub t report at g slip on the c semiconduct d cannot guai material suppliers. do not include usive, limited j e provided in ct, consequent	chnology stance, if any, uter box and or devices in rantee the ers. Supplier Information is trace levels product Microchip's ial or		(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	
	erature type solders (i.e. lead-based alloys containing pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the of porated's knowledge and belief as of the date of this t below the threshold of regulatory concern for any re- ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the informati- original packing materials is true and correct to the b leteness and accuracy of data in this form because i mation is often protected from disclosure as trade se ided only as estimates of the average weight of these ipants, metals, and non-metal materials contained wit ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporate ations, sales order acknowledgement, and invoices.	g 85% by weight or more lead. d via internal design controls, i chemical substance is NOT an document, there is no credible agulatory scheme world-wide. flammability standard for plas cals/plastics/ ipped are made from polyvinyl ion in this form concerning sub test of its knowledge and belief thas been compiled based on i crets and some information ma parts and the average weight of thin silicon devices (silicon IC) warranty, express or implied, w id and its subsidiaries are cont the users' reliance on the infor	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and, t reason to believe that the unavoidable impurity concent tics. You can access the UL IQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to hole stances restricted by ROHS in Microchip Technology Ind , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provi y not have been provided by subcontract assemblers ar of anticipated significant toxic metals components. Thes in the finished parts. with respect to the information provided in this declaration ained in Microchip's standard terms and conditions of so Declarations and shall not be liable for any damages, dire	to the best o ration of the obtain a tes d the packin corporated's ded by raw i d raw matei e estimates on. The exclu ale. These ar	of Microchip Te e chemical sub t report at g slip on the c semiconduct d cannot guai material suppliers. do not include usive, limited j e provided in ct, consequent	chnology stance, if any, uter box and or devices in rantee the ers. Supplier Information is trace levels product Microchip's ial or	0.87	(mg) Total (mg) Total (mg) Total (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.83

Silica, vitreous (or fused) Epoxy Resin ' Phenolic Resin ' Carbon Black Copper Iron ' Phosphorous Zinc (Metal)	CAS Number 60676-86-0 Trade Secret Trade Secret	"Contained In" Sub-Component Mold Compound	% l otal Weight					-		e4
Silica, vitreous (or fused) Epoxy Resin ' Phenolic Resin ' Carbon Black Copper Iron ' Phosphorous Zinc (Metal)	60676-86-0 Trade Secret Trade Secret	Sub-Component Mold Compound								
Silica, vitreous (or fused) Epoxy Resin ' Phenolic Resin ' Carbon Black Copper Iron ' Phosphorous Zinc (Metal)	60676-86-0 Trade Secret Trade Secret	Mold Compound		mg/part	ppm	7.20	(mg) Total	Mold Compound	% ot Total Weight	59.97
Epoxy Resin Phenolic Resin Carbon Black Copper Iron Phosphorous Zinc (Metal)	Trade Secret Trade Secret		50.975	6.117	509,745		Silica, vitreous (or fused)	60676-86-0	85.00	r
Phenolic Resin - Carbon Black Copper Iron Phosphorous Zinc (Metal)	Trade Secret	Mold Compound	5.217	0.626	52,174		Epoxy Resin	Trade Secret	8.70	l
Copper Iron Phosphorous Zinc (Metai)	4000.00.4	Mold Compound	3.598	0.432	35,982		Phenolic Resin	Trade Secret	6.00	l
Iron Phosphorous Zinc (Metal)	1333-86-4	Mold Compound	0.180	0.022	1,799		Carbon Black	1333-86-4	0.30	l
Phosphorous Zinc (Metal)	7440-50-8	Lead Frame	32.712	3.925	327,123		<u>.</u>	Total	100.00	
Zinc (Metal)	7439-89-6	Lead Frame	0.773	0.093	7,733	4.03	(mg) Total	Lead Frame	% of Total Weight	33.62
	7723-14-0	Lead Frame	0.084	0.010	841		Copper	7440-50-8	97.30	í.
õ	7440-66-0	Lead Frame	0.050	0.006	504		Iron	7439-89-6	2.30	1
Silver	7440-22-4	Die Attach	0.886	0.106	8,856		Phosphorous	7723-14-0	0.25	l
Epoxy Resin	9003-36-5	Die Attach	0.226	0.027	2,256		Zinc (Metal)	7440-66-0	0.15	l
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.076	0.009	756			Total	100.00	
Phenolic hardener	92-88-6	Die Attach	0.004	0.000	36	0.14	(mg) Total	Die Attach	% of Total Weight	1.2
Butyl cellosolve acetate	112-07-2	Die Attach	0.010	0.001	96		Silver	7440-22-4	74	
Silicon	7440-21-3	Chip (Die)	4.010	0.481	40.100		Epoxy Resin	9003-36-5	19	I
Gold	7440-57-5	Wire Bond	0.770	0.092	7,700		t-Butyl phenyl glycidyl ether	3101-60-8	6	l
Nickel	7440-02-0	Plating on external leads (pins)	0.406	0.049	4.064		Phenolic hardener	92-88-6	0	l
Palladium	7440-05-3	Plating on external leads (pins)	0.022	0.003	215		Butyl cellosolve acetate	112-07-2	1	l
Gold	7440-57-5	Plating on external leads (pins)	0.002	0.000	22		Baly concentre acetate	Total	100.00	
		TOTA		12.000	1,000,000	0.48	Total (mg)	Chip (Die)	% of Total Weight	4.01
	0.0120 g To				.,,	0.10	Doped Silicon	7440-21-3	100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	design controls, sup	plier declarations, and /or analytical test data.				0.09	(mg) Total	Wire Bond	% of Total Weight	0.77
chemical substance is absent from the list above, the chemical subs orporated's knowledge and belief as of the date of this document, the , is not below the threshold of regulatory concern for any regulatory (ding compounds used by Microchip meet the UL94 V0 flammability) (with a complete before the concern of features of the united for the state)	ere is no credible rea / scheme world-wide	son to believe that the unavoidable impurity co	ncentration of th	e chemical su			Doped Gold	7440-57-5 Total	100 100.00	
o://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ protective "tubes" in which the specific product is shipped are mad l certain "reels" may be made from PVC plastic.	de from polyvinyl chl	oride (PVC) plastic. "Window envelopes" used	o hold the packi	ng slip on the	outer box	0.05	(mg) Total	Plating on external leads (pins)	% of Total Weight	0.43
rochip Technology Incorporated believes the information in this forr heir original packing materials is true and correct to the best of its kr completeness and accuracy of data in this form because it has been oplier information is often protected from disclosure as trade secrets rmation is provided only as estimates of the average weight of these lude trace levels of dopants, metals, and non-metal materials contain	nowledge and belief, n compiled based on s and some informati se parts and the avera	as of the date listed in this form. Microchip Tec the ranges provided in Material Safety Data She on may not have been provided by subcontract ge weight of anticipated significant toxic metal	hnology Incorporets provided by assemblers and	ated cannot g aw material s raw material s	juarantee uppliers. suppliers.		Nickel	7440-02-0	94.50	
rochip Technology Incorporated does not provide any warranty, exp							Palladium	7440-05-3	5.00	
rranties provided by Microchip Technology Incorporated and its subs rochip's quotations, sales order acknowledgement, and invoices.										4
							Gold	7440-57-5	0.50	

bochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the pleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier mation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information ovided only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not include trace s of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.	Semiconductor Device	e Type: MNY 08 TDF	N 2x3x0.8mm (5Q)		nation Base A pper Alloy (C			•	ogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling e4
Site Work 6007 P4:0 Mod Compound 0.075 7.13 0.074 Bigon Fault Trade Secret Mod Compound 5.217 7.13 0.217 7.13 0.217 7.13 0.217 7.13 0.217 7.13 0.217 7.13 0.217 7.13 0.217 7.13 0.217 7.13 0.217 7.13 0.217 7.13 0.217 7.13 0.217 7.13 0.108 5.17 0.008 1.00	Basic Substance	CAS Number			mg/part	ppm	8.40	(mg) Total	Mold Compound	% ot Total Weight	59.97
Epopy Resin Task Secret Mold Compound 5.217 0.730 62,174 Prende Realin Task Secret Mold Compound 5.68 6.644 6.564 5.626 Composition 17405 Secret Mold Compound 0.773 4.77 (mg) Test Task Secret 6.70 Prespherons 7723-14-0 Lead Frame 0.064 0.012 441 2 Coppose 7440-05.6 97.30 4.77 (mg) Test 7400-05.6 97.30 4.77 (mg) Test 7400-05.6 97.30 4.77 (mg) Test 7400-05.6 97.30 4.77 (mg) Test 10.80 77.30 4.77 (mg) Test 10.80	Silica vitreous (or fused)	60676-86-0	Mold Compound	50.975				Silica, vitreous (or fused)	60676-86-0	85.00	
Caston Black 1333 864 Mod Compand 0.100 0.028 1.779 (Eaton Black 1333 864 0.30 Copper 7440 556 Lead Frame 0.014 0.012 7.71 4.810 1333 864 0.30 Philon 7723 140 Lead Frame 0.014 0.012 7.71 4.87 Caston Black 1333 864 0.30 Bilon 7744 556 Lead Frame 0.014 0.012 7.71 4.77 Caston Black 1333 864 0.30 Bilon 7744 524 De Alatan 0.056 0.013 9.300 7723 14.0 0.25 Applyabilitation 7440 754 De Alatan 0.003 240 0.77 Ong Teat De Astach 100.00 Hestonyclic organs 7440 754 Pation with Black form 0.014 0.001 740 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00								Epoxy Resin	Trade Secret	8.70	
Caston Black 1333 864 Mod Compand 0.100 0.028 1.779 (Eaton Black 1333 864 0.30 Copper 7440 556 Lead Frame 0.014 0.012 7.71 4.810 1333 864 0.30 Philon 7723 140 Lead Frame 0.014 0.012 7.71 4.87 Caston Black 1333 864 0.30 Bilon 7744 556 Lead Frame 0.014 0.012 7.71 4.77 Caston Black 1333 864 0.30 Bilon 7744 524 De Alatan 0.056 0.013 9.300 7723 14.0 0.25 Applyabilitation 7440 754 De Alatan 0.003 240 0.77 Ong Teat De Astach 100.00 Hestonyclic organs 7440 754 Pation with Black form 0.014 0.001 740 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00				3.598	0.504				Trade Secret	6.00	
Copper 743 556 Lead Frame 32.712 4.500 227.23 Unit Total	Carbon Black			0.180	0.025	1,799		Carbon Black	1333-86-4	0.30	
Trion 7439 896 Lead Frame 0.773 0.108 7.73 0.471 (mg) Total Lead Frame %, of Total Weigh 33.62 Arrow 7723-16.0 Lead Frame 0.007 524 641 Copy 743.05.0 7.00	Copper	7440-50-8	Lead Frame	32.712	4,580	327.123			Total	100.00	
Phosphorum 772-140 Lead Frame 0.084 0.012 941 Zon (Mail) 7440-624 Die Attach 0.058 0.013 9.00 Key 7440-624 Die Attach 0.058 0.031 9.00 722-140 0.23 Appliase Trass Stort Die Attach 0.054 0.033 240 0.17 0.058 0.72 1.00 722-140 0.25 0.05 0.050 2.0		7439-89-6		0.773	0.108	7,733	4.71	(mg) Total	Lead Frame	% of Total Weight	33.62
Zinc (Maii) 7440-56-0 Least Prame 0.050 0.007 644 Silver 7440-52-4 Die Attach 0.056 0.033 2.00 Acrysterisein Proprany Trado Secret Die Attach 0.056 0.033 2.00 Heimochlor agrine Compound Trado Secret Die Attach 0.024 0.033 2.00 Metter Compound Trado Secret Die Attach 0.024 0.033 2.00 Gold 7440-25-3 Chip Dieh 4.010 0.561 40.100 Silver 7440-25-4 748 7440-25-4 748 7440-25-4 748 7440-25-4 748 7440-25-4 748 7440-25-4 748 7440-25-4 748 7440-25-4 748 7440-25-4 748 7440-25-4 748 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 7440-25-4 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>00.02</td></t<>											00.02
Sket 7440 224 Die Attach 0.338 0.131 9,380 Progehous 7723+16 0.25 Arcytkate reider Sportetary Trade Secret Die Attach 0.024 0.003 2(16) 0.030 2(16) 0.031 2(16) 0.031 2(16) 0.031 2(16) 0.031 2(16) 0.031 2(16) 0.031 2(16) 0.031 2(16) 0.017 Table Secret 1(16) 1(16) 1(16) 1(16) 1(16) 1(16) 1(16) 1(16) 1(16) 0.021 0.011 1(16)											
Acystare realines Proprietary Trade Societ Die Attach 0.216 0.003 2.400 2.100 <td></td>											
Trade Blick Trade Scort Die Attach 0.024 0.033 240 Image Scort Total Beard 56 Total Weight 12 Metrocyclic organic compound 7440-21.3 Chip (Die) 4.010 0.551 40,100 56 Total Weight 12 Mickel 7440-22.4 Wire Bond 0.770 0.105 7.700 Trade Scort 7.402.24 78 Nickel 7440-22.5 Palance 0.014 1.02 0.058 4.10 Trade Scort 2.0 1.00 </td <td></td>											
Heterocyclic organic compound Trade Secret Die Attach 0.024 0.033 240 0.17 (mg) Tetal Die Attach % of Test Weight 1.2 Gold 7440-07-5 Wire Bond 0.770 0.108 7.700 1.088 7.400-02- Pailung on esternal leads (pins) 0.074 0.008 4.010 Frage Secret 2 Gold 7440-07-5 Wire Bond 0.714 0.002 139 Frage Secret 2 100.00 <							1	Zinc (wetai)			
Silion 7440-21-3 Chip (De) 4.010 0.681 40,100 0.861 40,100 0.861 40,100 No.861 7440-22-4 778 Nickel 7440-22-0 Pilatry on external leads (pins) 0.412 0.068 4,116 Tracet static Tracet static 760 Gold 7440-75-6 Pilatry on external leads (pins) 0.014 0.005 0.001 45 Gold 7440-75-6 Pilatry on external leads (pins) 0.014 0.002 0.05 0.001 45 Gold 7440-75-6 Pilatry on external leads (pins) 0.011 45 0.000 0.55 Total (mg) Chip (Die) % of Total Weight 4.01 Nike 2002/53/26 (End-of Lie Vehices at ELV) protective 0.0146/25 (CH IS breactive), EU Directive and the above EU Directive and the above the Directive/ the above EU Directive and the above the due of this document, there is no redible reason to believe that the unavoidable impurity consentration of the chemical substance, if is not beleve that the above EU Directive and the above EU Directive aboleve that the amove above EU Directive and the above EU D							0.47	(4.0
Gold 7440-57.5 Wire Bord 0.770 0.108 7.700 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	, , ,						0.17				1.2
Nicket 7440-02-0 Planing on external leads (pins) 0.412 0.058 41.16 Baladum 5/37/410 Planing on external leads (pins) 0.014 0.020 139 Gold 7440-57-5 Planing on external leads (pins) 0.014 0.001 45 Gold 7440-57-5 Planing on external leads (pins) 0.014 0.001 45 Cold 7440-57-5 Planing on external leads (pins) 0.014 0.001 45 Cold 7440-57-5 Planing on external leads (pins) 0.014 0.004 1.000 1.4000 1.000 4.000 1.000 4.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.01 1.000 0.01 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.01 1.000 0.01 1.000 1.000 1.000 1.000 1.000 1.000 1.000											
Pailadium 5/37/40 Plaining on external leads (pine) 0.014 0.001 0.012 139 Gold 7440-57-5 Plaining on external leads (pine) 0.014 0.011 <td></td>											
Gold 7440-67-5 Plaing on external leads (pins) 0.004 0.001 45 Total Total Total 10000 OURD 40 G Total Mass TOTALS: 100.000 1.000.000 1.000.000 1.000.000 0.55 Total (mg) Chip Chip % of Total Weight 4.01 Note that the shore general metrics compt with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 0.11 (mg) Total Wire Bond % of Total Weight 0.01 Note the shore general metrics is absent from the list above. The chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology 0.01 -0.11 (mg) Total Wire Bond % of Total Weight 0.77 Note both the threshold of regulatory concern from any regulatory scheme work-wide. 0.01 -0.0										_	
Outlag Total Mass Total State Total (mg) Chip (Dig) % of Total Weight 4.01 semiconductor device and its homogenous materials comply with EU Directive 2002/85/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Directive 2002/85/EC (End-of-Life Vehicles (ELV) Directives has been vertified via internal design controls, supplier declarations, and /or analytical test data. 0.014 (mg) Total Wire Bond % of Total Weight 0.77 porarder knowledge and belier as to the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not believe that the unavoidable impurity concentration of the chemical substance, if uncomplobuling/pages/offering/industrise/behremicals/plastics. 0.11 (mg) Total Wire Bond % of Total Weight 0.77 Viscomptional ingredues and believe that the unavoidable impurity concentration of the chemical substance, if uncomplobuling/pages/offering/industrise/behremicals/plastics. 0.01 (mg) Total Wire Bond % of Total Weight 0.77 Viscomptional ingredues and believe the threshold of regulatory concent for any regulatory scheme world-wide. Total 100.00 0.06 (mg) Total Doped Glid 7440-57.5 100 0.06 (mg) Total Wire Bond % of Total Weight 0.43 inviccomptional in this form concerning substances restricted by RoHS in Microchip Tech							Hete	erocyclic organic compound		-	
Outlob g Total Mass Depend Silecom 7440.21:3 100 Total Total Total 100.00 Universe and its homogenous materials comply with EU Directive 2023/SEC (End-SI Directive), EU Directive 2011/S/S/EU (ROHS Recast Directive) and with EU 0.11 (mg) Total Virial 100.00 Universe 2023/SEC (End-of-Life Vehicles (ELV) Directives has been verified via international substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology 0.11 (mg) Total Wire Bond % of Total Weight 0.77 periade S inovidege and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if a not provide of the document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if a not provide of the document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance is NOT an intentional ingredient in the second working and from PVC plastic. 0.06 (mg) Total Virial Virial Virial Virial </td <td>Gold</td> <td>7440-57-5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Gold	7440-57-5									
eardiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2002/53/EC (End-ol-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. thermical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology portated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if so to below the threshold of regulatory concern of rary regulatory scheme world-wide. Total Wiee Bond % of Total Weight 0.77 total 00.00 0.11 (mg) Total Wire Bond % of Total Weight 0.77 Doped Gold 7440-57-5 100 Doped Gold 7440-57-5 100 Doped Gold 7440-57-5 100 0.06 (mg) Total Plating on external teads (pins) % of Total Weight 0.43 total 100.00 0.06 (mg) Total Plating on external teads (pins) % of Total Weight 0.43 0.06 (mg) Total 100.00 0.06 (mg) T			TOTAL	S: 100.000	14.000	1,000,000	0.56	Total (mg)	Chip (Die)	% of Total Weight	4.01
emiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Substance its basent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology porated 5 knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if so to beliw the threshold of regulatory concern for any regulatory scheme workled in the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and "retest" may be made from PVC plastic. chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated frame section and belief, as of the date isleted in this form. Microchip Technology Incorporated frame sections and belief as of the aterial suppliers. Suppliers. Suppliers. chip Technology Incorporated believes eave in this form because it has been compiled based on the ranges provided by Material Schep Texa. chip Technology Incorporated deaves of the average weight of these parts and the average weight of these secrets and non-metal materials scherate and the subsidiaries are contained within silicon exists (silicon IC) in the finished parts. chip Technology Incorporated does not provide and its subsidiaries are contained within silicon exists (silicon IC) in the finished parts. chip Technology Incorporated does not provide and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's then worked in Microchip's tions, sales or the acknowledge and the users' reliance on the information in Material Content Declarations (MCD) or independent third parity stars are subt of the user		0.0140 a T	otal Mass					Doped Silicon	7440-21-3	100	
porated s knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if Doped Gold 7440-57-5 100 s not below the threshold of regulatory concern for any regulatory scheme world-wide. Total Doped Gold 7440-57-5 100 reg compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at					ective) and wit	h EU			Total	100.00	
Init comploting used by micro log metric by the second of plastes. For each access the CF in naming of databases to obtain a test report at the function of the second				and to the best o	·		0.11	(mg) Total			0.77
in "reels" may be made from PVC plastic. 0.06 (mg) Total leads (pins) % of Total Weight 0.43 bcbip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated cannot guarantee the original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the poleteness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. Information boulded only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace so of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Nickel 7440-02-0 95.73 bchip Technology Incorporated does not provide do any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's atoms and duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or my say atoms aresult of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Palladium 7440-05-3 3.23 users or updates or changes to Material Content Declarations (MCD) or independent third party test reports (SGS) or JGPSSI (D02) (Gold) 7440-57-5 1.04	hemical substance is absent from the list above, the ch 'porated's knowledge and belief as of the date of this do	hemical substance is NOT an int locument, there is no credible re	entional ingredient in the semiconductor device ason to believe that the unavoidable impurity co		f Microchip Te	echnology	0.11		Wire Bond	% of Total Weight	0.77
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anties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's Palladium 7440-05-3 3.23 ations, sales order acknowledgement, and invoices. Sochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or nwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or is Certificate of Compliance for semiconductor products.	chemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this dc is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fla ://ul.com/global/eng/pages/offerings/industries/chemical	hemical substance is NOT an int locument, there is no credible re ny regulatory scheme world-wide lammability standard for plastic als/plastics/	entional ingredient in the semiconductor device ason to believe that the unavoidable impurity co e. s. You can access the UL iQTM family of databa	ncentration of the	f Microchip Te e chemical sub t report at	echnology ostance, if		Doped Gold	Wire Bond 7440-57-5 Total Plating on external	% of Total Weight 100 100.00	
rwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or JGPSSI (D02) (Gold) 7440-57-5 1.04	hemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL94 V0 fli //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information original packing materials is true and correct to the bes pleteness and accuracy of data in this form because it h mation is often protected from disclosure as trade secre- ovided only as estimates of the average weight of these	hemical substance is NOT an int locument, there is no credible re ny regulatory scheme world-wid lammability standard for plastic als/plastics/ opped are made from polyvinyl ch on in this form concerning subst est of its knowledge and belief, a has been compiled based on the rets and some information may e parts and the average weight o	entional ingredient in the semiconductor device ason to believe that the unavoidable impurity co e. s. You can access the UL iQTM family of databa loride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technolo s of the date listed in this form. Microchip Technol ranges provided in Material Safety Data Sheets not have been provided by subcontract assemb of anticipated significant toxic metals componer	ncentration of the es to obtain a tes to hold the packin gy Incorporated's ology Incorporate provided by raw r ers and raw mater	f Microchip Te e chemical sub t report at g slip on the c semiconduct d cannot guai material suppliers.	echnology sstance, if outer box and or devices in rantee the iers. Supplier Information		Doped Gold (mg) Total	Wire Bond 7440-57-5 Total Plating on external leads (pins)	% of Total Weight 100 100.00 % of Total Weight	
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	e Type: 08 TDFN 2x3x0.75m	m (80)		ation Base (oper Alloy (nogeneous Materials: e.g. pc boards, display	ys)	JEDEC 97 Produ Marking and/or Pkg. Labeling e4
		"Contained In"	% Total			25.74	() T -4-1	Mold Compound	% ot Total Weight	53.08
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	25.74	(mg) Total	Mola Compouna	% of Total weight	53.08
Silica, vitreous (or fused)	60676-86-0	Mold Compound	45.118	21.882	451,180		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.618	2.240	46,180		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.185	1.545	31,848		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.159	0.077	1,592		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	39.338	19.079	393,384			Total	100.00	
Iron	7439-89-6	Lead Frame	0.930	0.451	9,299	19.61	(mg) Total	Lead Frame	% of Total Weight	40.43
Phosphorous Zinc (Metal)	7723-14-0 7440-44-0	Lead Frame Lead Frame	0.101	0.049	1,011 606		Copper	7440-50-8 7439-89-6	97.30 2.30	
Silver	7440-44-0	Die Attach	0.061	0.029	1.463		Iron Phosphorous	7439-89-6	0.25	
Epoxy resin	Trade Secret	Die Attach	0.146	0.071	380		Zinc (Metal)	7440-44-0	0.25	
Metal oxide	Trade Secret	Die Attach	0.006	0.003	57		Zinc (Wetai)	Total	100.00	
Silicon	7440-21-3	Chip (Die)	3.980	1.930	39.800	0.09	(mg) Total	Die Attach	% of Total Weight	0.19
Gold	7440-21-3	Wire Bond	0.560	0.272	5.600	0.09	(mg) Total Silver	7440-22-4	% of Total weight 77	0.19
Nickel	7440-07-0	Plating on external leads (pins)	1.584	0.272	5,600		Epoxy resin	Trade Secret	20	
Palladium	7440-02-0	Plating on external leads (pins)	0.088	0.043	880		Metal oxide	Trade Secret	20	
Gold	7440-03-3	Plating on external leads (pins)	0.088	0.043	880		Ivietal Oxide	Total	100.00	
Gold	7440-57-5	TOTA		48.500	1.000.000	1.93	Total (mg)	Chip (Die)	% of Total Weight	3.98
		IUIA				1.93				3.98
	0.0485 g T comply with EU Directive 2002/95			ctive) and wit	,,		Dope Silicon	7440-21-3 Total	100 100.00	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive 2002/95	/EC (RoHS Directive), EU Directive 2011/65/EU (F		ctive) and wit	,,	0.27		7440-21-3	100	0.56
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified emical substance is absent from the list above, the ch orated's knowledge and belief as of the date of this d	omply with EU Directive 2002/95 via internal design controls, sup nemical substance is NOT an inte ocument, there is no credible rea	/EC (RoHS Directive), EU Directive 2011/65/EU (F plier declarations, and /or analytical test data. entional ingredient in the semiconductor device a son to believe that the unavoidable impurity con	oHS Recast Direct	Microchip Te	h EU echnology	0.27	Dope Silicon	7440-21-3 Total	100 100.00	0.56
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified emical substance is absent from the list above, the ch orated's knowledge and belief as of the date of this di not below the threshold of regulatory concern for an ing compounds used by Microchip meet the UL94 V0 fl	omply with EU Directive 2002/95 via internal design controls, sup nemical substance is NOT an inte ocument, there is no credible rea y regulatory scheme world-wide. ammability standard for plastics.	/EC (RoHS Directive), EU Directive 2011/65/EU (F plier declarations, and /or analytical test data. entional ingredient in the semiconductor device a son to believe that the unavoidable impurity con	oHS Recast Direct	Microchip Te chemical sub	h EU echnology	0.27	Dope Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.56
emiconductor device and its homogenous materials o ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified emical substance is absent from the list above, the cr borated's knowledge and belief as of the date of this d s not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 fl ul.com/global/eng/pages/offerings/industries/chemica rotective "tubes" in which the specific product is ship artain "reels" may be made from PVC plastic.	with EU Directive 2002/95 via internal design controls, supplemical substance is NOT an inte ocument, there is no credible ree y regulatory scheme world-wide. ammability standard for plastics. Is/plastics/	/EC (RoHS Directive), EU Directive 2011/65/EU (F plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device a son to believe that the unavoidable impurity con You can access the UL iQTM family of database	oHS Recast Direct nd, to the best of entration of the c s to obtain a test	Microchip Te chemical sub report at	h EU echnology stance, if	0.27	Dope Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.56
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified emical substance is absent from the list above, the cf brated's knowledge and belief as of the date of this di- not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 fi l.com/global/eng/pages/offerings/industries/chemica otective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. hip Technology Incorporated believes the information riginal packing materials is true and correct to the be steness and accuracy of data in this form because it l ar information is often protected from disclosure as t ation is provided only as estimates of the average we	with EU Directive 2002/95 via internal design controls, sup memical substance is NOT an inte ocument, there is no credible rea y regulatory scheme world-wide. ammability standard for plastics. (s/plastics/ ped are made from polyvinyl chlo n in this form concerning substan st of its knowledge and belief, as has been compiled based on the cade secrets and some informatii ight of these parts and the avera	/EC (RoHS Directive), EU Directive 2011/65/EU (F plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device a ison to believe that the unavoidable impurity con You can access the UL iQTM family of database bride (PVC) plastic. "Window envelopes" used to nces restricted by RoHS in Microchip Technolog of the date listed in this form. Microchip Technolog ranges provided in Material Safety Data Sheets p on may not have been provided by subcontract a ge weight of anticipated significant toxic metals	oHS Recast Direct nd, to the best of centration of the s to obtain a test hold the packing Incorporated's s logy Incorporated's s coyided by raw m ssemblers and ra	Microchip Te chemical sub report at slip on the o semiconducto d cannot guan aterial suppl w material suppl	h EU echnology stance, if uter box or devices in rantee the iers. appliers.		Oppe Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads	100 100.00 % of Total Weight 100 100.00	
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	ce Type: QAE 8 (Lead)	TDFN-S 6x5x0.8mm (U3)		nation Base A pper Alloy (C	-		•	ogeneous Materials: a.g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			38.82	(mg) Total	Mold Compound	% ot Total Weight	52.6
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	50.02	,		J	52.0
Silica, fused	60676-86-0	Mold Compound	47.340	34.937	473,400		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.551	1.883	25,511	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin Carbon Black	Trade Secret 1333-86-4	Mold Compound Mold Compound	2.551 0.158	1.883 0.116	25,511 1,578		Phenolic Resin Carbon Black	Trade Secret 1333-86-4	4.85 0.30	
Carbon black	7440-50-8	Lead Frame	38.215	28.203	382,150	l	Carbon Black	1333-86-4 Total		J
Iron	7439-89-6	Lead Frame	0.940	0.694	9,400	29.52	(m. n) T - (- 1	Lead Frame		40
Silver	7439-89-0	Lead Frame	0.762	0.094	9,400 7.620	29.52	(mg) Total		% of Total Weight	40
Zinc	7440-22-4 7440-66-6	Lead Frame	0.762	0.562	7,620		Copper	7440-50-8	95.54 2.35	
Phosphorous	7440-66-6	Lead Frame	0.050	0.037	330		Iron Silver	7439-89-6 7440-22-4	2.35	
Silver (Ag)	7440-22-4	Die Attach	0.033	0.024	7,040		Zinc	7440-22-4 7440-66-6	0.13	
Epoxy Resin	Trade Secret	Die Attach	0.150	0.520	1,496		Phosphorous	7440-66-6	0.13	
Copper (Cu)	7440-50-8	Die Attach	0.026	0.019	264		r nosphorous	Total		l
Silicon	7440-30-8	Chip (Die)	5.140	3.793	51,400	0.65	(mg) Total	Die Attach	% of Total Weight	0.88
Gold	7440-27-5	Wire Bond	0.270	0.199	2,700	0.65	Silver (Ag)	7440-22-4	80	0.00
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.110	0.199	2,700		Epoxy Resin	Trade Secret	17	
1111	7440-31-3 P	TOTALS:	100.000	73.800	1.000.000		Copper (Cu)	7440-50-8	3	
		Total Mass	100.000	10.000	1,000,000	l l	Copper (Cu)	Total	÷	J
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	tive) and with	EU	3.79	Total (mg)	Chip (Die)	% of Total Weight	5.14
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie themical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ling compounds used by Microchip meet the UL94 VC //ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic.	e). ed via internal design controls chemical substance is NOT ar document, there is no credibl any regulatory scheme world- D flammability standard for pla cals/plastics/ hipped are made from polyviny	, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity concer wide. stics. You can access the UL iQTM family of databases t I chloride (PVC) plastic. "Window envelopes" used to ho	, to the best of ntration of the o obtain a test old the packing	Microchip Tec chemical subs report at slip on the ou	chnology stance, if uter box and	3.79	Total (mg) Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100	0.27
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verifie chemical substance is absent from the list above, the prorated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for 'Jul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informat r original packing materials is true and correct to the I pleteness and accuracy of data in this form because i mation is often protected from disclosure as trade so vided only as estimates of the average weight of these opants, metals, and non-metal materials contained wi rochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorporat tations, sales order acknowledgement, and invoices.	b). ad via internal design controls chemical substance is NOT ar id ocument, there is no credibl any regulatory scheme world- 0 flammability standard for pla cals/plastics/ hipped are made from polyviny tion in this form concerning st best of its knowledge and beli it has been compiled based or screts and some information in p parts and the average weight thin silicon devices (silicon IC v warranty, express or implied, ed and its subsidiaries are cor	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity concer- wide. stics. You can access the UL iQTM family of databases t rl chloride (PVC) plastic. "Window envelopes" used to he ubstances restricted by RoHS in Microchip Technology In ef, as of the date listed in this form. Microchip Technology to the ranges provided in Material Safety Data Sheets pro- hay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's s y Incorporate y Incorporate mand raw materi ase estimates d see. The exclusion. The exclusion	Microchip Teo chemical subs report at slip on the ou semiconducto d cannot guara aterial supplie al suppliers. Ir o not include sive, limited pi provided in N	chnology stance, if uter box and r devices in antee the ars. Supplier nformation is trace levels roduct flicrochip's		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.27
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie themical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for full com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the informat original packing materials is true and correct to the pleteness and accuracy of data in this form because i pleteness and accuracy of data in this form because i ochip Technology Incorporated believes the informat original packing materials is true and correct to the pleteness and accuracy of data in this form because i ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporate ations, sales order acknowledgement, and invoices.	b). ad via internal design controls chemical substance is NOT ar i document, there is no credibl any regulatory scheme world- 0 flammability standard for pla cals/plastics/ hipped are made from polyviny tion in this form concerning st best of its knowledge and belik it has been compiled based or acrets and some information n p parts and the average weight thin silicon devices (silicon IC v warranty, express or implied, ed and its subsidiaries are cor or changes to Material Content the users' reliance on the information the subsidiaries on the information. Content of the users' reliance on the information. The users' reliance on the information. The users' reliance on the information. Content of the users' relian	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and te reason to believe that the unavoidable impurity concer- wide. stics. You can access the UL iQTM family of databases te chloride (PVC) plastic. "Window envelopes" used to he state of the date listed in this form. Microchip Technology In af, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets pro- hay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The) in the finished parts. with respect to the information provided in this declarated trained in Microchip's standard terms and conditions of the states and conditions of the standard terms and conditions of the states and the standard terms and conditions of the states and the standard terms and conditions of the states and the states and terms and conditions of the states and the standard terms and conditions of the states and the states and terms and conditions of the states and the states and terms and conditions of the states and terms and conditions of the states and terms and conditions of the states and the states and terms and conditions of the states and terms and conditions of the states and terms and conditions of the states and terms and conditions of the states and terms and conditions of the states and terms and conditions of the states and terms and	, to the best of htration of the o obtain a test old the packing hcorporated's a y Incorporated's a y Incorporated ided by raw m and raw materi use estimates d ion. The exclusion. These are rect or indirect	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial suppliers. Ir o not include a suppliers. Ir o not include sive, limited pi provided in M , consequentia	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.20	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 % of Total Weight 100.00	0.27

		ad) TDFN-S 6x8x0.8mm (S9)		nation Base A pper Alloy (C				geneous Materials: g. pc boards, display	/s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Semiconductor Device	Type: QZAE UO (Le	ad) I DFN-3 6x8x0.8mm (S9) "Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	52.55	(mg) Total	Mold Compound	% ot Total Weight	37.14
Fused Silica	60676-86-0	Mold Compound	32.869	46.509	328,689		Fused Silica	60676-86-0	88.50	
Epoxy Resin 1	Trade Secret	Mold Compound	2.414	3.416	24,141		Epoxy Resin	Trade Secret	6.50	
Phenol Resin	Trade Secret	Mold Compound	1.764	2.496	17,642		Phenol Resin	Trade Secret	4.75	
Carbon Black	1333-86-4	Mold Compound	0.093	0.131	929		Carbon Black	1333-86-4	0.25	
Copper	7440-50-8	Lead Frame	47.490	67.199	474,904			Total	100.00	
Silver	7440-22-4	Lead Frame	3.287	4.651	32,867	73.82	(mg) Total	Lead Frame	% of Total Weight	52.17
Iron	7439-89-6	Lead Frame	1.143	1.617	11,425		Copper	7440-50-8	91.03	
Zinc	7440-66-6	Lead Frame	0.177	0.251	1,774		Silver	7440-22-4	6.30	
Phosphorus	7723-14-0	Lead Frame	0.073	0.103	730		Iron	7439-89-6	2.19	
Silver	7440-22-4	Die Attach	0.963	1.362	9,625		Zinc	7440-66-6	0.34	
Acrylic Resin	Trade secret	Die Attach	0.106	0.150	1,063		Phosphorus	7723-14-0	0.14	
Polybutadiene derivative & copolymer	Trade secret	Die Attach	0.081	0.115	813			Total	100.00	
Acrylate	Trade secret	Die Attach	0.069	0.097	688	1.77	(mg) Total	Die Attach	% of Total Weight	1.25
Epoxy Resin 2	Trade secret	Die Attach	0.031	0.044	313		Silver	7440-22-4	77.00	
Silicon	7440-21-3	Chip (Die)	7.800	11.037	78,000		Acrylic Resin	Trade secret	8.50	
Gold	7440-57-5	Wire Bond	0.040	0.057	400	Polybutadie	ene derivative & copolymer	Trade secret	6.50	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.600	2.264	16,000		Acrylate	Trade secret	5.50	
		TOTALS:	100.000	141.500	1,000,000		Epoxy Resin	Trade secret	2.50	
	0.1415	g Total Mass						Total	100.00	
semiconductor device and its homogenous materials co	omply with EU Directive 2	02/95/EC (RoHS Directive) EU Directive 2011/65/EU (RoH)								
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			S Recast Direc	tive) and with	EU	11.04	Total (mg)	Chip (Die)	% of Total Weight	7.8
	ria internal design control		S Recast Direc	tive) and with	EU	11.04	Total (mg) Doped Silicon	7440-21-3	100	7.8
	emical substance is NOT a cument, there is no credit	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ple reason to believe that the unavoidable impurity concen	to the best of	Microchip Teo	:hnology	11.04	,	,	5	7.8
npliance with the above EU Directives has been verified v chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any	emical substance is NOT a cument, there is no credit regulatory scheme world ammability standard for pl	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ple reason to believe that the unavoidable impurity concen	to the best of tration of the	Microchip Teo chemical subs	:hnology	0.06	,	7440-21-3	100	0.04
mpliance with the above EU Directives has been verified v chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fla ://ul.com/global/eng/pages/offerings/industries/chemical	emical substance is NOT a cument, there is no credit regulatory scheme world ummability standard for pl s/plastics/	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ple reason to believe that the unavoidable impurity concen -wide.	to the best of tration of the o obtain a test	Microchip Teo chemical subs report at	chnology stance, if		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
mpliance with the above EU Directives has been verified v chemical substance is absent from the list above, the che proprated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fla ://ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bes npleteness and accuracy of data in this form because it his rmation is often protected from disclosure as trade secret	emical substance is NOT a cument, there is no credit regulatory scheme world immability standard for pl s/plastics/ wed are made from polyvin in this form concerning s t of its knowledge and bel as been compiled based o ets and some information irts and the average weigt	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	to the best of tration of the o obtain a test Id the packing corporated's s y Incorporated ided by raw m	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara laterial supplie	chnology stance, if iter box and r devices in intee the ers. Supplier iformation is		Doped Silicon (mg) Total	7440-21-3 Total	100 100.00 % of Total Weight	
npliance with the above EU Directives has been verified v chemical substance is absent from the list above, the che proprated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 file o://ul.com/global/eng/pages/offerings/industries/chemical: protective "tubes" in which the specific product is shipp ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information r original packing materials is true and correct to the bes pleteness and accuracy of data in this form because it h- rordid no is offen protected from disclosure as trade secre- vided only as estimates of the average weight of these pa lopants, metals, and non-metal materials contained within rochip Technology Incorporated does not provide any wa	emical substance is NOT a cument, there is no credit regulatory scheme world mmability standard for pl s/plastics/ wed are made from polyvin in this form concerning s t of its knowledge and bel as been compiled based o sts and some information rts and the average weigt n silicon devices (silicon l arranty, express or implied	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	to the best of tration of the o obtain a test Id the packing corporated's s y Incorporated ided by raw m nd raw mates d on. The exclusion	Microchip Tec chemical subs report at semiconducto d cannot guara aterial supplie al supplieral supplie al supplieral supplie sive, limited p	chnology stance, if iter box and r devices in untee the irs. Supplier iformation is trace levels		(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
ppliance with the above EU Directives has been verified v chemical substance is absent from the list above, the che ryporated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fla //ul.com/global/eng/pages/offerings/industries/chemical: protective "tubes" in which the specific product is shipp ain "reels" may be made from PVC plastic. "ochip Technology Incorporated believes the information roriginal packing materials is true and correct to the bes pleteness and accuracy of data in this form because it hi rmation is often protected from disclosure as trade secre yided only as estimates of the average weight of these pa oppants, metals, and non-metal materials contained within "ochip Technology Incorporated does not provide any we ranties provided by Microchip Technology Incorporated a tations, sales order acknowledgement, and invoices."	emical substance is NOT a cument, there is no credit regulatory scheme world immability standard for pl s/plastics/ wed are made from polyvin in this form concerning s t of its knowledge and bel as been compiled based o ts and some information irts and the average weigh n silicon devices (silicon l arranty, express or implied and its subsidiaries are con hanges to Material Contente b users' reliance on the int	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, be reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. These C) in the finished parts.	to the best of tration of the o obtain a test ld the packing corporated's s y Incorporated ided by raw m nd raw materi se estimates d on. The exclus ale. These are ect or indirect	Microchip Tec chemical subs report at semiconducto d cannot guara- aterial suppliers. In lo not include sive, limited p provided in N , consequentia	chnology itance, if iter box and r devices in intee the rs. Supplier iformation is trace levels roduct licrochip's al or	0.06	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.04
pliance with the above EU Directives has been verified v hemical substance is absent from the list above, the che porated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any ing compounds used by Microchip meet the UL94 V0 fla //ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the information original packing materials is true and correct to the bes pleteness and accuracy of data in this form because it h- mation is often protected from disclosure as trade secre ided only as estimates of the average weight of these pa pants, metals, and non-metal materials contained within bochip Technology Incorporated does not provide any we anties provided by Microchip Technology Incorporated a ations, sales order acknowledgement, and invoices. Dochip disclaims any duty to notify users of updates or cl	emical substance is NOT a cument, there is no credit regulatory scheme world immability standard for pl s/plastics/ wed are made from polyvin in this form concerning s t of its knowledge and bel as been compiled based o ts and some information irts and the average weigh n silicon devices (silicon l arranty, express or implied and its subsidiaries are con hanges to Material Contente b users' reliance on the int	s, supplier declarations, and /or analytical test data. un intentional ingredient in the semiconductor device and, be reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology In n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a tt of anticipated significant toxic metals components. The C) in the finished parts. I, with respect to the information provided in this declarati ntained in Microchip's standard terms and conditions of s t Declarations and shall not be liable for any damages, dir	to the best of tration of the o obtain a test ld the packing corporated's s y Incorporated ided by raw m nd raw materi se estimates d on. The exclus ale. These are ect or indirect	Microchip Tec chemical subs report at semiconducto d cannot guara- aterial suppliers. In lo not include sive, limited p provided in N , consequentia	chnology itance, if iter box and r devices in intee the rs. Supplier iformation is trace levels roduct licrochip's al or	0.06	(mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.04

Semiconductor Devic	e Type: QAF 08 (Lead) T	DFN-S 6x5x0.8 mm (9A)		nation Base A opper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e4
Basic Substance	CAS Number	Sub-Component	Weight	malaart		38.79	(mg) Total	Mold Compound	% ot Total Weight	51.17
Silica, vitreous (or fused)	60676-86-0	Mold Compound	43,495	mg/part 32.969	ppm 434,945	30.79			85.00	51.17
Epoxy Resin	Trade Secret	Mold Compound	43.495	32.969	434,945		Silica, vitreous (or fused) Epoxy Resin	60676-86-0 Trade Secret	85.00	
Phenolic Resin	Trade Secret	Mold Compound	3.070	2.327	30,702		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.154	0.116	1.535		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	37.675	28.557	376.746		Carbon Black	Total		
Iron	7439-89-6	Lead Frame	0.891	0.675	8,906	29.35	(mg) Total	Lead Frame	% of Total Weight	38.72
Phosphorous	7723-14-0	Lead Frame	0.097	0.073	968	29.35	Copper	7440-50-8	97.30	30.72
Zinc (Metal)	7440-66-0	Lead Frame	0.058	0.073	581		Iron	7439-89-6	97.30 2.30	
Silver	7440-00-0	Die Attach	1.051	0.797	10.508		Phosphorous	7439-89-8	0.25	
Epoxy resin	Trade Secret	Die Attach	0.284	0.215	2.840		Zinc (Metal)	7440-66-0	0.25	
Metal oxide	Trade Secret	Die Attach	0.264	0.032	426		ZINC (Metal)	7440-66-0 Total		
						1.00				1.10
Gamma-butyrolactone	96-48-0	Die Attach	0.043	0.032	426	1.08	(mg) Total	Die Attach	% of Total Weight	1.42
Silicon	7440-21-3	Chip (Die)	8.220	6.231	82,200		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.260	0.197	2,600		Epoxy resin	Trade Secret	20	
Nickel	7440-02-0	Plating on external leads (pins)	0.198	0.150	1,985		Metal oxide	Trade Secret	3	
Palladium	7440-05-3	Plating on external leads (pins)	0.011	0.008	105		Gamma-butyrolactone	96-48-0	3	
Gold	7440-57-5	Plating on external leads (pins)	0.001	0.001	11			Total		
		τοτα	S: 100.000	75.800	1,000,000	6.23	Total (mg)	Chip (Die)	% of Total Weight	8.22
	0.0750 T.									
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive		/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast Dire	ective) and wit	h EU	0.20	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.26
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie nemical substance is absent from the list above, the porated's knowledge and belief as of the date of this	comply with EU Directive 2002/95). d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea	/EC (RoHS Directive), EU Directive 2011/65/EL plier declarations, and /or analytical test data. ntional ingredient in the semiconductor devic son to believe that the unavoidable impurity o	and, to the best c	of Microchip Te	echnology	0.20		Total	100.00	0.26
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0	comply with EU Directive 2002/95 d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea ny regulatory scheme world-wide flammability standard for plastics	/EC (RoHS Directive), EU Directive 2011/65/EL plier declarations, and /or analytical test data. ntional ingredient in the semiconductor devic son to believe that the unavoidable impurity o	and, to the best concentration of the	of Microchip Te e chemical sub	echnology	0.20	(mg) Total	Total Wire Bond	100.00 % of Total Weight 100	0.26
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemio protective "tubes" in which the specific product is sh	comply with EU Directive 2002/95 d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea ny regulatory scheme world-wide flammability standard for plastics als/plastics/	/EC (RoHS Directive), EU Directive 2011/65/EU plier declarations, and /or analytical test data. ntional ingredient in the semiconductor devic son to believe that the unavoidable impurity of You can access the UL iQTM family of datab	and, to the best c oncentration of the ses to obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if		(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight 100	0.26
semiconductor device and its homogenous materials trive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemil portective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. bochip Technology Incorporated believes the informat original packing materials is true and correct to the b pleteness and accuracy of data in this form because i mation is often protected from disclosure as trade se ovided only as estimates of the average weight of the s of dopants, metals, and non-metal materials contain	comply with EU Directive 2002/95 d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea iny regulatory scheme world-wide flammability standard for plastics als/plastics/ ipped are made from polyvinyl chl on in this form concerning substa est of its knowledge and belief, as t has been compiled based on the crets and some information may n se parts and the average weight o'	/EC (RoHS Directive), EU Directive 2011/65/EU plier declarations, and /or analytical test data. ntional ingredient in the semiconductor devic son to believe that the unavoidable impurity of You can access the UL iQTM family of datab oride (PVC) plastic. "Window envelopes" use nces restricted by RoHS in Microchip Techno of the date listed in this form. Microchip Tech ranges provided in Material Safety Data Shee ot have been provided by subcontract assem anticipated significant toxic metals compone	and, to the best o oncentration of the ses to obtain a tes to hold the packin provided by raw lers and raw mate	of Microchip Te e chemical sub st report at ng slip on the o s semiconduct ed cannot gua material suppliers.	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information		(mg) Total	Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pllance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemi porotective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. bochip Technology Incorporated believes the informat original packing materials is true and correct to the b poleteness and accuracy of data in this form because i mation is often protected from disclosure as trade se voided only as estimates of the average weight of the s of dopants, metals, and non-metal materials contail bochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated	comply with EU Directive 2002/95 , d via internal design controls, sup chemical substance is NOT an inte document, there is no credible ree iny regulatory scheme world-wide flammability standard for plastics cals/plastics/ ipped are made from polyvinyl chl on in this form concerning substa est of its knowledge and belief, as t has been compiled based on the crets and some information may n se parts and the average weight of ted within silicon devices (silicon warranty, express or implied, with	/EC (RoHS Directive), EU Directive 2011/65/EU plier declarations, and /or analytical test data. ntional ingredient in the semiconductor devic son to believe that the unavoidable impurity of You can access the UL iQTM family of datab bride (PVC) plastic. "Window envelopes" use nces restricted by RoHS in Microchip Techno of the date listed in this form. Microchip Tech ranges provided in Material Safety Data Shee to have been provided by subcontra tassem anticipated significant toxic metals compone C) in the finished parts.	and, to the best oncentration of the ses to obtain a tes to hold the packin objy incorporated's nology incorporated's nology incorporated y raw ilers and raw mate tts. These estimated the set of the	of Microchip Te e chemical sub at report at ng slip on the c s semiconduct ed cannot gua material suppli rial suppliers. es do not inclu usive, limited	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information ide trace product		(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemio protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the informat original packing materials is true and correct to the b pleteness and accuracy of data in this form because is mation is often protected from disclosure as trade se voided only as estimates of the average weight of the	comply with EU Directive 2002/95 d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea iny regulatory scheme world-wide flammability standard for plastics cals/plastics/ ipped are made from polyvinyl chl on in this form concerning substa set of its knowledge and belief, as thas been compiled based on the crets and some information may n se parts and the average weight o the dist within silicon devices (silicon warranty, express or implied, with d and its subsidiaries are contained r changes to Material Content Deci the users' reliance on the information the users' reliance on the users' reliance on the information the users' reliance on the users' reliance on the information the users' reliance on the users' reliance on th	/EC (RoHS Directive), EU Directive 2011/65/EU plier declarations, and /or analytical test data. ntional ingredient in the semiconductor devic son to believe that the unavoidable impurity of . You can access the UL iQTM family of datab oride (PVC) plastic. "Window envelopes" usee ances restricted by RoHS in Microchip Techno of the date listed in this form. Microchip Tech ranges provided in Material Safety Data Shee of have been provided by subcontract assem anticipated significant toxic metals compone (C) in the finished parts. respect to the information provided in this de ed in Microchip's standard terms and conditio arations and shall not be liable for any damage	and, to the best of oncentration of the ses to obtain a test to hold the packin provided by raw i provided by raw i lers and raw mate tts. These estimate claration. The excl s of sale. These an s, direct or indirect	of Microchip Te e chemical sub at report at hg slip on the of s semiconduct ed cannot guan material suppliers. es do not inclu usive, limited re provided in ct, consequent	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information Jde trace product Microchip's tial or		(mg) Total Doped Gold (mg) Total Nickel	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0	100.00 % of Total Weight 100 100.00 % of Total Weight 94.50	

Semiconductor Devic	e Type: MN/HC/LC 10(Lead) TDFN 3x3x0.8mm (QA)		nation Base . pper Alloy (C	-		Package Homoge 8.1 Electronics (e.g.	eneous Materials: pc boards, displays)		JEDEC 97 Product Markin and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	12.60	(mg) Total	Mold Compound	% ot Total Weight	60.00
Silica, vitreous (or fused)	60676-86-0	Mold Compound	51.000	10.710	510,000		Silica, vitreous (or fused)	60676-86-0	85.00	l
Epoxy Resin	Trade Secret	Mold Compound	5.220	1.096	52.200		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3,600	0.756	36,000		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.180	0.038	1,800		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	30.572	6.420	305,720			Total	100.00	1
Iron	7439-89-6	Lead Frame	0.752	0.158	7,520	6.72	(mg) Total	Lead Frame	% of Total Weight	32.00
Silver	7440-22-4	Lead Frame	0.610	0.128	6.096		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.040	0.008	400		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.026	0.006	264		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.059	0.012	590		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.015	0.003	150		Phosphorous	7723-14-0	0.08	
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.005	0.001	50			Total	100.00	4
Phenolic hardener	92-88-6	Die Attach	0.000	0.000	2	0.02	(mg) Total	Die Attach	% of Total Weight	0.08
Butyl cellosolye acetate	112-07-2	Die Attach	0.001	0.000	6		Silver	7440-22-4	73.80	
Silicon	7440-21-3	Chip (Die)	4.820	1.012	48,200		Epoxy Resin	9003-36-5	18.80	
Doped Gold	7440-57-5	Wire Bond	0.100	0.021	1,000		t-Butyl phenyl glycidyl ether	3101-60-8	6.30	
Tin	7440-31-5 Plating or	n external leads (pins) - Matte Tin / annealed at 150°C for 1 ho	Jr 3.000	0.630	30,000		Phenolic hardener	92-88-6	0.30	
		TOTAL	S: 100.000	21.000	1,000,000		Butyl cellosolve acetate	112-07-2	1	
	0.0210 a Tot	al Mass						Total	100.00	
								TOLAI	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		C (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Dire	ective) and wit	h EU	1.01	(mg) Total	Chip (Die)	% of Total Weight	4.82
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified	via internal design controls, suppli	er declarations, and /or analytical test data.			-	1.01	(mg) Total Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	4.82
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl	via internal design controls, suppli nemical substance is NOT an intent ocument, there is no credible reaso y regulatory scheme world-wide. lammability standard for plastics. Y	er declarations, and /or analytical test data. ional ingredient in the semiconductor device ar on to believe that the unavoidable impurity conc	d, to the best o entration of the	f Microchip Te chemical sub	echnology	0.02		Chip (Die)	% of Total Weight	4.82
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an	via internal design controls, suppli nemical substance is NOT an intent ocument, there is no credible reaso y regulatory scheme world-wide. lammability standard for plastics. Y Is/plastics/	er declarations, and /or analytical test data. ional ingredient in the semiconductor device ar in to believe that the unavoidable impurity conc ou can access the UL iQTM family of databases	d, to the best o entration of the to obtain a tes	f Microchip Te chemical sub t report at	echnology ostance, if		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Ipliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fi //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	via internal design controls, suppli nemical substance is NOT an intenti ocument, there is no credible reaso y regulatory scheme world-wide. lammability standard for plastics. Y lis/plastics/ pped are made from polyvinyl chlori n in this form concerning substance best of its knowledge and belief, as e it has been compiled based on the rade secrets and some information sight of these parts and the average	er declarations, and /or analytical test data. ional ingredient in the semiconductor device ar on to believe that the unavoidable impurity conc 'ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to es restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technology may not have been provided by subcontract as weight of anticipated significant toxic metals c	d, to the best o entration of the to obtain a tes hold the packin Incorporated's ology Incorpor, s provided by r; semblers and r	f Microchip To e chemical sub t report at g slip on the o semiconduct ated cannot g aw material s	echnology ostance, if outer box or devices uarantee uppliers. uppliers.		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Ipliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ting compounds used by Microchip meet the UL94 V0 ff //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatio eir original packing materials is true and correct to the completeness and accuracy of data in this form becauss olier information is often protected from disclosure as to mation is provided only as estimates of the average we	via internal design controls, suppli nemical substance is NOT an intenti ocument, there is no credible reaso y regulatory scheme world-wide. lammability standard for plastics. Y us/plastics/ uped are made from polyvinyl chlori n in this form concerning substance best of its knowledge and belief, as e it has been compiled based on th- rade secrets and some information eight of these parts and the average rials contained within silicon devic varranty, express or implied, with re and its subsidiaries are contained	er declarations, and /or analytical test data. ional ingredient in the semiconductor device ar in to believe that the unavoidable impurity conc 'ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to res restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology e of the value been provided by subcontract as weight of anticipated significant toxic metals of es (silicon IC) in the finished parts. spect to the information provided in this declar	d, to the best o entration of the to obtain a tes nold the packin Incorporated's ology Incorpor, s provided by r semblers and omponents. Th ation. The exclu	f Microchip To e chemical sub t report at g slip on the o semiconduct ated cannot g aw material su aw material su sese estimates usive, limited	echnology sstance, if outer box or devices uarantee uppliers. uppliers. s do not		Doped Silicon (mg) Total (mg) Total (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Ipliance with the above EU Directives has been verified shemical substance is absent from the list above, the ch prorated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fi //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatio ier original packing materials is true and correct to the completeness and accuracy of data in this form becaus pleir information is often protected from disclosure as t mation is provided only as estimates of the average we de trace levels of dopants, metals, and non-metal mate ochip Technology Incorporated does not provide any w anties provided by Microchip Technology Incorporated	via internal design controls, suppli nemical substance is NOT an intenti ocument, there is no credible reaso y regulatory scheme world-wide. lammability standard for plastics. Y ils/plastics/ uped are made from polyvinyl chlori n in this form concerning substance best of its knowledge and belief, as e it has been compiled based on the rade secrets and some information sight of these parts and the average rirals contained within silicon devic varranty, express or implied, with re and its subsidiaries are contained invoices. changes to Material Content Declar; te users' reliance on the information	er declarations, and /or analytical test data. ional ingredient in the semiconductor device ar on to believe that the unavoidable impurity conc ou can access the UL iQTM family of databases ide (PVC) plastic. "Window envelopes" used to res restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technology is of the date listed in this form. Microchip Technology is of the date listed in this form. Microchip Technology is of the date listed in this form. Microchip Technology is spect to the information provided in this declar in Microchip's standard terms and conditions of ations and shall not be liable for any damages,	d, to the best o entration of the to obtain a tes hold the packin lncorporated's ology incorpor- semblers and r omponents. Th ation. The exclu f sale. These ar lirect or indirect	f Microchip To e chemical sub t report at g slip on the o semiconduct ated cannot g aw material s aw material s ese estimates usive, limited e provided in t, consequent	echnology sstance, if outer box or devices uarantee uppliers. uppliers. do not product	0.02	Doped Silicon (mg) Total (mg) Total (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.10

Semiconductor Device	Type: AIA 10 VDFN 3x	3x0.9 (90)		ination Base opper Alloy (-		•	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e4
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	13.56	(mg) Total	Mold Compound	% ot Total Weight	48.96
Silica, fused	60676-86-0	Mold Compound	42.204	11.690	422.035		Silica, fused	60676-86-0	86.20	
Epoxy Resin	Trade Secret	Mold Compound	2.938	0.814	29.376		Epoxy Resin	Trade Secret	6.00	
Phenolic Resin A	Trade Secret	Mold Compound	2.938	0.814	29,376		Phenolic Resin A	Trade Secret	6.00	
Aluminium hydroxide	21645-51-2	Mold Compound	0.734	0.203	7,344		Aluminium hydroxide	21645-51-2	1.50	1
Carbon Black	1333-86-4	Mold Compound	0.147	0.041	1,469		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	37.993	10.524	379,928			Total	100.00	
Iron	7439-89-6	Lead Frame	0.917	0.254	9,172	10.81	(mg) Total	Lead Frame	% of Total Weight	39.03
Zinc	7440-66-6	Lead Frame	0.049	0.014	488		Copper	7440-50-8	97.34	
Silver	7440-22-4	Lead Frame	0.039	0.011	390		Iron	7439-89-6	2.35	1
Phosphorus	7723-14-0	Lead Frame	0.032	0.009	322		Zinc	7440-66-6	0.13	1
Silver	7440-22-4	Die Attach	0.477	0.132	4,774		Silver	7440-22-4	0.10	1
Epoxy resin	Trade Secret	Die Attach	0.124	0.034	1,240		Phosphorus	7723-14-0	0.08	1
Metal oxide	Trade Secret	Die Attach	0.019	0.005	186			Total	100.00	9
Silicon	7440-21-3	Chip (Die)	9,110	2.523	91,100	0.17	(mg) Total	Die Attach	% of Total Weight	0.62
Doped Gold	7440-57-5	Wire Bond	0.080	0.022	800		Silver	7440-22-4	77.00	
Nickel	7440-02-0	Plating on external leads (pins)	1.980	0.548	19.800		Epoxy resin	Trade Secret	20.00	
Palladium	7440-05-3	Plating on external leads (pins)	0.110	0.030	1,100		Metal oxide	Trade Secret	3.00	
Gold	7440-57-5	Plating on external leads (pins)	0.110	0.030	1,100		Motal 6406	Total	100.00	4
0014	1110010	TOTA		27.700	1,000,000	2.52	(mg) Total	Chip (Die)	% of Total Weight	9.11
	0.0277 g To		.3. 100.000	21.100	1,000,000	2.52	Doped Silicon	7440-21-3	100.00	9.11
mpliance with the above EU Directives has been verified v	ia internal design controls, sup	lies deelesstiene, and /es enclutient test date								
chemical substance is absent from the list above, the che		ntional ingredient in the semiconductor device a				0.02	(mg) Total	Wire Bond	% of Total Weight	0.08
chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this doo r, is not below the threshold of regulatory concern for any Iding compounds used by Microchip meet the UL94 V0 fla	cument, there is no credible reas regulatory scheme world-wide.	ntional ingredient in the semiconductor device a son to believe that the unavoidable impurity con	centration of the	chemical sul		0.02	(mg) Total	Wire Bond 7440-57-5 Total	% of Total Weight 100.00 100.00	0.08
orporated's knowledge and belief as of the date of this doo , is not below the threshold of regulatory concern for any	cument, there is no credible rea: regulatory scheme world-wide. Immability standard for plastics. s/plastics/	ntional ingredient in the semiconductor device a son to believe that the unavoidable impurity con You can access the UL iQTM family of database	centration of the	chemical sul	bstance, if	0.02		7440-57-5	100.00	2.2
orporated's knowledge and belief as of the date of this doo r, is not below the threshold of regulatory concern for any Iding compounds used by Microchip meet the UL94 V0 flan o://ul.com/global/eng/pages/offerings/industries/chemicals a protective "tubes" in which the specific product is shippe	cument, there is no credible rea: regulatory scheme world-wide. Immability standard for plastics. s/plastics/ we are made from polyvinyl chlo in this form concerning substaa t of its knowledge and belief, as as been compiled based on the I sts and some information may nu rts and the average weight of ar	tional ingredient in the semiconductor device a son to believe that the unavoidable impurity con You can access the UL iQTM family of database ride (PVC) plastic. "Window envelopes" used to the set of the date listed in this form. Microchip Technolog of the date listed in this form. Microchip Technolog of the date listed in this form. Microchip Technolog of the date listed in this form. Set of the date been anges provided in Material Safety Data Sheets p ot have been provided by subcontract assemble ticipated significant toxic metals components."	centration of the s to obtain a tes hold the packin y Incorporated's logy Incorporate rovided by raw i s and raw mate	chemical sub t report at g slip on the o semiconduct d cannot gua naterial suppliers.	bostance, if outer box and tor devices in rantee the liers. Supplier Information is		Doped Gold	7440-57-5 Total Plating on external	100.00 100.00	
orporated's knowledge and belief as of the date of this doo i, is not below the threshold of regulatory concern for any Iding compounds used by Microchip meet the UL94 V0 fla bo://ul.com/global/eng/pages/offerings/industries/chemicals a protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. "crochip Technology Incorporated believes the information ir original packing materials is true and correct to the best mpleteness and accuracy of data in this form because it ha prmation is often protected from disclosure as trade secre- vided only as estimates of the average weight of these pai	cument, there is no credible rea: regulatory scheme world-wide. Immability standard for plastics. s/plastics/ we are made from polyvinyl chlor in this form concerning substant to f its knowledge and belief, as as been compiled based on the I sts and some information may nur rts and the average weight of ar n silicon devices (silicon IC) in the arranty, express or implied, with	tional ingredient in the semiconductor device a son to believe that the unavoidable impurity con You can access the UL iQTM family of database ride (PVC) plastic. "Window envelopes" used to the set of the date listed in this form. Microchip Technolog of the date listed in this form. Microchip Technolog of the date listed in this form. Microchip Technolog of the velocity of the date listed in this form. Set of the anges provided in Material Safety Data Sheets p ot have been provided by subcontract assemble ticipated significant toxic metals components. T e finished parts.	centration of the s to obtain a tes hold the packin y Incorporated's logy Incorporate rovided by raw 's and raw mate hese estimates ration. The excli	chemical sub t report at g slip on the o semiconduct d cannot gua naterial suppliers. do not includo usive, limited	ostance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product		(mg) Total	7440-57-5 Total Plating on external leads (pins)	100.00 100.00 % of Total Weight	

Semiconductor Device	Type: MUY 08 (Lead)	UDFN 2x3x0.5mm (6Q)		nation Base A opper Alloy (C	.,			ogeneous Materials: g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e4
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	5.37	(mg) Total	Mold Compound	% ot Total Weight	67.95
Silica, fused	60676-86-0	Mold Compound	61.155	4,831	611.550		Silica, fused	60676-86-0	90.00	1
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.296	0.260	32,956	Enoy	v Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.296	0.260	32,956	Ерох	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.204	0.016	2,039		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	20.779	1.642	207.786			Total		u .
Tin	7440-31-5	Lead Frame	0.053	0.004	533	1.69	(mg) Total	Lead Frame	% of Total Weight	21.33
Silver	7440-22-4	Lead Frame	0.406	0.032	4.063		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.038	0.002	384		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.053	0.004	533		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.911	0.151	19.110		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.441	0.035	4.410		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.049	0.004	490			Total	100.00	1
Heterocyclic organic compound	Trade Secret	Die Attach	0.049	0.004	490	0.19	(mg) Total	Die Attach	% of Total Weight	2.45
Silicon	7440-21-3	Chip (Die)	7.350	0.581	73,500	0.110	Silver	7440-22-4	78	2.10
Gold	7440-57-5	Wire Bond	0.750	0.059	7.500		Acrylate resins Proprietary	Trade Secret	18	
Nickel	7440-02-0	Plating on external leads (pins)	0.163	0.013	1,627		Treated silica	Trade Secret	2	
Palladium	7440-05-3	Plating on external leads (pins)	0.005	0.000	55	Hete	erocyclic organic compound	Trade Secret	2	
JGPSSI (D02) (Gold)	7440-57-5	Plating on external leads (pins)	0.002	0.000	18	Tiete	tocyclic organic compound	Total	- 100.00	1
	1440 01 0		0.002							
		TOT	ALS: 100.000	7 900	1 000 000		Total (mg)	Chin (Dia)	9/ of Total Woight	7.25
semiconductor device and its homogenous materials o 53/EC (End-of-Life Vehicles (ELV) Directive).	0.0079 g To comply with EU Directive 2002/95	otal Mass	ALS: 100.000	7.900	1,000,000 Directive	0.58	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	7.35
	comply with EU Directive 2002/95	otal Mass //EC (RoHS Directive), EU Directive 2011/65/EU			,,	0.58		7440-21-3	100	0.75
53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2002/99 via internal design controls, sup nemical substance is NOT an inte ocument, there is no credible rea	otal Mass JFEC (RoHS Directive), EU Directive 2011/65/EL pplier declarations, and /or analytical test data. entional ingredient in the semiconductor devic	(RoHS Recast Directive) and with EU	Directive		Doped Silicon	7440-21-3 Total	100 100.00	
53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified nemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this d	via internal design controls, sup via internal design controls, sup nemical substance is NOT an inte ocument, there is no credible re- y scheme world-wide.	Dtal Mass GEC (RoHS Directive), EU Directive 2011/65/EU oplier declarations, and /or analytical test data. antional ingredient in the semiconductor devic ason to believe that the unavoidable impurity o	I (RoHS Recast Directive e and, to the best of Mic concentration of the cher) and with EU rochip Techno nical substanc	Directive		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight 100	
53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified nemical substance is absent from the list above, the ci porated's knowledge and belief as of the date of this d v the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 fl	via internal design controls, sup wia internal design controls, sup nemical substance is NOT an inte ocument, there is no credible re- y scheme world-wide. ammability standard for plastics Is/plastics/	btal Mass VEC (RoHS Directive), EU Directive 2011/65/EU opplier declarations, and /or analytical test data. antional ingredient in the semiconductor devic ason to believe that the unavoidable impurity of ason to believe that the UL iQTM family of datab	I (RoHS Recast Directive e and, to the best of Mic concentration of the cher ases to obtain a test repo) and with EU rochip Techno nical substanc	Directive logy .e, if any, is not		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified nemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this d v the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 fl /ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	via internal design controls, sup via internal design controls, sup memical substance is NOT an inte ocument, there is no credible rea y scheme world-wide. ammability standard for plastics Is/plastics/ ped are made from polyvinyl chi n in this form concerning substa ts knowledge and belief, as of th iled based on the ranges provid vation may not have been provid of anticipated significant toxic i	btal Mass WEC (RoHS Directive), EU Directive 2011/65/EU pplier declarations, and /or analytical test data. entional ingredient in the semiconductor devic ason to believe that the unavoidable impurity of ason to believe that the unavoidable impurity of ason to believe that the UL iQTM family of datab loride (PVC) plastic. "Window envelopes" user ances restricted by RoHS in Microchip Technolo te date listed in this form. Microchip Technolo ed in Material Safety Data Sheets provided by ed by subcontract assemblers and raw materi	I (RoHS Recast Directive e and, to the best of Mici concentration of the cher ases to obtain a test report d to hold the packing slip logy Incorporated's semi gy Incorporated cannot (raw material suppliers. Sa al suppliers. Information) and with EU rochip Techno nical substanc ort at o on the outer I iconductor dev guarantee the supplier inform is provided or	Directive logy .e, if any, is not box and certain vices in their completeness lation is often nly as estimates	0.06	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external	100 100.00 % of Total Weight 100 100.00	0.75
53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified nemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d v the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 fl /ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship s" may be made from PVC plastic. chip Technology Incorporated believes the information hal packing materials is true and correct to the best of ccuracy of data in this form because it has been comp cted from disclosure as trade secrets and some inform average weight of these parts and the average weight	via internal design controls, sup via internal design controls, sup memical substance is NOT an into ocument, there is no credible rea y scheme world-wide. ammability standard for plastics Is/plastics/ ped are made from polyvinyl chi n in this form concerning substa ts knowledge and belief, as of th iled based on the ranges provid hation may not have been provid of anticipated significant toxic i finished parts.	patal Mass WEC (RoHS Directive), EU Directive 2011/65/EU pplier declarations, and /or analytical test data. entional ingredient in the semiconductor devic ason to believe that the unavoidable impurity of ason to believe that the unavoidable impurity of access restricted by RoHS in Microchip Technolo redate listed in this form. Microchip Technolo ed in Material Safety Data Sheets provided by led by subcontract assemblers and raw materi metals components. These estimates do not in a respect to the information provided in this do	I (RoHS Recast Directive e and, to the best of Mici- concentration of the cher ases to obtain a test repo- d to hold the packing slip logy Incorporated's semi gy Incorporated cannot (raw material suppliers. S al suppliers. Information iclude trace levels of dop eclaration. The exclusive.) and with EU rochip Techno nical substanc ort at o on the outer I guarantee the guarantee the guarantee the guarantee, is provided or pants, metals, i , limited produ	Directive logy .e, if any, is not box and certain vices in their completeness ation is often nly as estimates and non-metal ct warranties	0.06	(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.75
53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified nemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this di v the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 fi /ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship s" may be made from PVC plastic. chip Technology Incorporated believes the information tal packing materials is true and correct to the best of ccuracy of data in this form because it has been comp cted from disclosure as trade secrets and some inform a verage weight of these parts and the average weight risks contained within silicon devices (silicon IC) in the chip Technology Incorporated does not provide any w ded by Microchip Technology Incorporated and its sui	via internal design controls, sup via internal design controls, sup memical substance is NOT an into ccument, there is no credible re- y scheme world-wide. ammability standard for plastics ls/plastics/ ped are made from polyvinyl chi in this form concerning substa tis knowledge and belief, as of ti iled based on the ranges provid ation may not have been provid sitianes are contained in Micro changes to Material Content Dec	batal Mass SFEC (RoHS Directive), EU Directive 2011/65/EU pplier declarations, and /or analytical test data. entional ingredient in the semiconductor devic ason to believe that the unavoidable impurity of s. You can access the UL iQTM family of datab loride (PVC) plastic. "Window envelopes" user ances restricted by RoHS in Microchip Technolo te date listed in this form. Microchip Technolo ed in Material Safety Data Sheets provided by ded by subcontract assemblers and raw materi metals components. These estimates do not in a respect to the information provided in this di- chip's standard terms and conditions of sale.	I (RoHS Recast Directive e and, to the best of Mici concentration of the cher ases to obtain a test report to hold the packing slip logy Incorporated samot f raw material suppliers. Sa al suppliers. Information clude trace levels of dop eclaration. The exclusive rhese are provided in Mi) and with EU rochip Techno mical substanc ort at o on the outer I iconductor dev guarantee the e supplier inform is provided or pants, metals, i , limited produ crochip's quot	Directive logy .e, if any, is not box and certain vices in their completeness lation is often nly as estimates and non-metal ct warranties lations, sales otherwise,	0.06	(mg) Total Doped Gold (mg) Total Nickel	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0	100 100.00 % of Total Weight 100 % of Total Weight 95.73	0.75

Semiconductor Device	e Type: 128 QFP 14x20x2	2.7mm (TT)		nation Base A pper Alloy (C			Package Hon	nogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Iotal	T	r - 1					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1207.04	(mg) Total	Mold Compound	% ot Total Weight	66.82
Silica Fused	60676-86-0	Mold Compound	58.982	1065.451	589,820		Silica Fused	60676-86-0	88.27	
Epoxy Resin	Trade Secret	Mold Compound	4.170	75.319	41,696		Epoxy Resin	Trade Secret	6.24	
Phenol Resin	Trade Secret	Mold Compound	3.468	62.645	34,680		Phenol Resin	Trade Secret	5.19	
Carbon Black	1333-86-4	Mold Compound	0.200	3.621	2,005		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	25.658	463.485	256,579			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.684	12.361	6,843	486.64	(mg) Total	Lead Frame	% of Total Weight	26.94
Silver	7440-22-4	Lead Frame	0.450	8,122	4.496		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.121	2,190	1,212		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.027	0.487	269		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.053	0.948	525		Silicon	7440-21-3	0.45	
Epoxy Resin	Trade secret	Die Attach	0.007	0.126	70		Magnesium	7439-95-4	0.10	
Diluent	Trade secret	Die Attach	0.007	0.126	70		Wagnesium	Total		4
Hardener	Trade secret	Die Attach	0.007	0.063	35	1.26	(mg) Total	Die Attach	% of Total Weight	0.07
						1.26				0.07
Silicon	7440-21-3	Chip (Die)	4.760	85.985	47,600		Silver	7440-22-4	75	
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.246	4.437	2,456		Epoxy Resin	Trade secret	10.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.004	0.079	44		Diluent	Trade secret	10.00	
Tin	7440-31-5 Pi	lating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.160	20.954	11,600		Hardener	Trade secret	5.00	
		TOTALS:	100.000	1,806.400	1,000,000			Total	100.00	
	1.8064 g	Total Mass				85.98	Total (mg)	Chip (Die)	% of Total Weight	4.76
		2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Direc	tive) and with	EU		Doped Silicon	7440-21-3	100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). opliance with the above EU Directives has been verified	I via internal design controls,	supplier declarations, and /or analytical test data.		·			Doped Silicon	7440-21-3 Total		
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified nemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d	l via internal design controls, hemical substance is NOT an document, there is no credible	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen	to the best of	Microchip Teo	chnology .	4.52	Doped Silicon (mg) Total			
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified nemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d s not below the threshold of regulatory concern for ar ng compounds used by Microchip meet the UL94 V0 f	I via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen	to the best of tration of the	Microchip Teo chemical subs	chnology .	4.52		Total Wire Bond Copper palladium	100.00	
stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	I via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen vide.	to the best of tration of the o obtain a test	Microchip Tee chemical subs report at	chnology stance, if	4.52	(mg) Total	Total Wire Bond Copper palladium coated (CuPd)	100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Ipliance with the above EU Directives has been verified themical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ting compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemicar protective "tubes" in which the specific product is ship	I via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen vide. stics. You can access the UL iQTM family of databases to	to the best of tration of the o obtain a test	Microchip Tee chemical subs report at	chnology stance, if	4.52	(mg) Total	Total Wire Bond Copper palladium coated (CuPd) 7440-50-8	100.00 % of Total Weight 98 2	0.25
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified themical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatic original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec rided only as estimates of the average weight of these p	I via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sul est of its knowledge and belie has been compiled based on crets and some information m parts and the average weight	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, a reason to believe that the unavoidable impurity concen- vide. stics. You can access the UL iQTM family of databases to a chloride (PVC) plastic. "Window envelopes" used to ho bstances restricted by ROHS in Microchip Technology In f, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov- ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	to the best of tration of the o obtain a test Id the packing corporated's a y Incorporate ided by raw m	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial supplie	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is	4.52	(mg) Total	Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.25
active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f s://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the be apleteness and accuracy of data in this form because it rorided only as estimates of the average weight of these plopants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any v	I via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sul est of its knowledge and belie has been compiled based on crets and some information m parts and the average weight hin silicon devices (silicon IC) warranty, express or implied, v	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, a reason to believe that the unavoidable impurity concen- vide. stics. You can access the UL iQTM family of databases to a chloride (PVC) plastic. "Window envelopes" used to ho bstances restricted by ROHS in Microchip Technology In f, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov- ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	to the best of tration of the o obtain a test Id the packing corporated's : y Incorporate ided by raw m nd raw materi se estimates d	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial supplie al suppliers. In o not include sive, limited p	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct	4.52	(mg) Total	Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.25
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ing compounds used by Microchip meet the UL94 V0 f /ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic.	d via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sul est of its knowledge and belie has been compiled based on crets and some information m parts and the average weight hin silicon devices (silicon IC) warranty, express or implied, d and its subsidiaries are cont changes to Material Content I the users' reliance on the infor	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, a reason to believe that the unavoidable impurity concen- vide. stics. You can access the UL iQTM family of databases to a chloride (PVC) plastic. "Window envelopes" used to ho bstances restricted by ROHS in Microchip Technology In f, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. These in the finished parts. with respect to the information provided in this declarati	to the best of tration of the o obtain a test ld the packing corporated's i y Incorporated's i y Incorporated ided by raw m ind raw materia se estimates d ion. The exclu- iale. These are ect or indirect	Microchip Tec chemical subs report at slip on the or cannot guara aterial supplie al supplieral suppli supplieral supplie	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or		(mg) Total Copper Palladium	Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 98 2 100.00	0.25

Semiconductor Device	Туре: 48 LQFP 7x7x1	.4mm (R8)		nination Base Copper Alloy (geneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% lotal Weight	mg/part	ppm	105.88	(mg) Total	Mold Compound	% ot Total Weight	58.05
Silica, vitreous (or fused)	60676-86-0	Mold Compound	49,343	90.001	493,425		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	49.343 5.050	9.212	493,425 50.504		Epoxy Resin	Trade Secret	85.00	
Phenolic Resin	Trade Secret	Mold Compound	3.483	6.353	34.830		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.174	0.318	1.742		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	28.877	52.672	288.771		Calbon black	Total	100.00	
Nickel	7440-02-0	Lead Frame	0.770	1.405	7.701	55.30	(mg) Total	Lead Frame	% of Total Weight	30.32
Silver	7440-02-0	Lead Frame	0.506	0.923	5,060	55.30		7440-50-8		30.32
							Copper		95.24	
Silicon	7440-21-3	Lead Frame	0.136	0.249	1,364		Nickel	7440-02-0	2.54	
Magnesium Olivers (A.r.)	7439-95-4	Lead Frame	0.030	0.055	303		Silver	7440-22-4	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.228	0.415	2,277		Silicon	7440-21-3	0.45	
Proprietary Resin	Trade Secret	Die Attach	0.054	0.098	537		Magnesium	7439-95-4	0.10	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.009	0.016	87			Total	100.00	
Silicon	7440-21-3	Chip (Die)	3.160	5.764	31,600	0.53	(mg) Total	Die Attach	% of Total Weight	0.29
Gold	7440-57-5	Wire Bond	1.340	2.444	13,400		Silver (Ag)	7440-22-4	78.50	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	6.840	12.476	68,400		Proprietary Resin	Trade Secret	18.50	
		TOTALS:	100.000	182.400	1,000,000	Pro	oprietary Curing agent & Hard	Trade Secret	3.00	
s semiconductor device and its homogenous materials cor		g Total Mass 02/95/EC (RoHS Directive). EU Directive 2011/65/EU (RoHS	S Recast Dire	ective) and wit	h EU Directive			Total	100.00	
s semiconductor device and its homogenous materials cor v2/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via	mply with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ective) and wit	h EU Directive	5.76	(mg) Total Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	3.16
2/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directive 20 a internal design controls nical substance is NOT ar ument, there is no credib	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	to the best o	of Microchip Te	echnology	5.76	,	Chip (Die)	% of Total Weight	3.16
12/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher orporated's knowledge and belief as of the date of this doc	mply with EU Directive 20 a internal design controls mical substance is NOT a ument, there is no credib atory scheme world-wide nmability standard for pla	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH: , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	to the best o tration of the	of Microchip Te e chemical sub	echnology	5.76 2.44	,	Chip (Die) 7440-21-3	% of Total Weight	3.16
12/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher orporated's knowledge and belief as of the date of this do to below the threshold of regulatory concern for any regul Iding compounds used by Microchip meet the UL94 V0 flan	mply with EU Directive 20 a internal design controls mical substance is NOT an ument, there is no credib atory scheme world-wide nmability standard for pla /plastics/	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le control that the unavoidable impurity concent stics. You can access the UL iQTM family of databases to	to the best o tration of the o obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if any,		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
12/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher orporated's knowledge and belief as of the date of this doc to below the threshold of regulatory concern for any regul lding compounds used by Microchip meet the UL94 V0 flan p://ul.com/global/eng/pages/offerings/industries/chemicals/ e protective "tubes" in which the specific product is shippe	mply with EU Directive 20 a internal design controls mical substance is NOT a ument, there is no credib atory scheme world-wide nmability standard for pla (plastics/ at are made from polyviny in this form concerning su of its knowledge and beli s been compiled based or s and some information n s and the average weigh	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH: , supplier declarations, and /or analytical test data. in itentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen istics. You can access the UL iQTM family of databases to /I chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In f, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov nay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	to the best o tration of the o obtain a tes Id the packin corporated's y Incorporate ided by raw r	of Microchip Te e chemical sub st report at ng slip on the c s semiconduct ed cannot guai material suppliers.	echnology sstance, if any, outer box and or devices in rantee the iers. Supplier Information is		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
12/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher orporated's knowledge and belief as of the date of this doc ot below the threshold of regulatory concern for any regul lding compounds used by Microchip meet the UL94 V0 flan p://ul.com/global/eng/pages/offerings/industries/chemicals/ a protective "tubes" in which the specific product is shippe tain "reels" may be made from PVC plastic. prochip Technology Incorporated believes the information I i original packing materials is true and correct to the best mpleteness and accuracy of data in this form because it has promation is often protected from disclosure as trade secret	mply with EU Directive 20 a internal design controls mical substance is NOT a ument, there is no credib atory scheme world-wide nmability standard for pla (plastics/ at are made from polyving) in this form concerning si of its knowledge and beli s been compiled based or s and some information n ts and the average weigh silicon devices (silicon IC ranty, express or implied,	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH: , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen stics. You can access the UL iQTM family of databases to /I chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In fef, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets prov nay not have been provided by subcontract assemblers a to f anticipated significant toxic metals components. The ;) in the finished parts. , with respect to the information provided in this declarati	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw r nd raw mater se estimates	of Microchip Te e chemical sub at report at ng slip on the c ed cannot guar material suppliers. do not include usive, limited	echnology ostance, if any, outer box and or devices in rantee the iers. Supplier Information is e trace levels product		(mg) Total (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
12/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher orporated's knowledge and belief as of the date of this doc oto below the threshold of regulatory concern for any regul. Iding compounds used by Microchip meet the UL94 V0 flan p://ul.com/global/eng/pages/offerings/industries/chemicals/ a protective "tubes" in which the specific product is shipped tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information i ir original packing materials is true and correct to the best mpleteness and accuracy of data in this form because it has ormation is often protected from disclosure as trade secret vided only as estimates of the average weight of these par flopants, metals, and non-metal materials contained within srochip Technology Incorporated does not provide any war ranties provided by Microchip Technology Incorporated ar	mply with EU Directive 20 a internal design controls mical substance is NOT a ument, there is no credib atory scheme world-wide nmability standard for pla (plastics/ ad are made from polyving) in this form concerning st of its knowledge and beli s been compiled based or s and some information n ts and the average weigh silicon devices (silicon IC ranty, express or implied, nd its subsidiaries are cor anges to Material Content users' reliance on the info	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH: , supplier declarations, and /or analytical test data. in intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen stics. You can access the UL iQTM family of databases to /I chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ef, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov at of anticipated significant toxic metals components. The) in the finished parts. with respect to the information provided in this declaratin tatianed in Microchip's standard terms and conditions of s Declarations and shall not be liable for any damages, dir	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw r nd raw mater se estimates o ion. The exclu- cale. These ar ect or indirec	of Microchip Te e chemical sub st report at ag slip on the of semiconduct ed cannot gua material suppl rial suppliers. do not include usive, limited re provided in ct, consequent	echnology stance, if any, outer box and or devices in rantee the iers. Supplier Information is a trace levels product Microchip's tial or	2.44	(mg) Total (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	1.34

AICROCHIP Semiconductor Device T				ination Base opper Alloy (ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Markir and/or Pkg. Labeling e3
Semiconductor Device 1	ype: 04 LQFF 10x	"Contained In"								65
Basic Substance	CAS Number	Sub-Component	% Total Weight	mg/part	ppm	119.94	(mg) Total	Mold Compound	% ot Total Weight	71.95
Fused Silica	60676-86-0	Mold Compound	60.870	101.470	608,697		Fused Silica	60676-86-0	84.60	
Epoxy Resin 1 & 2	Trade Secret	Mold Compound	4.245	7.076	42,451		Epoxy Resin 1 & 2	Trade Secret	5.90	
Metal Hydroxide	Trade Secret	Mold Compound	4.101	6.837	41.012		Metal Hydroxide	Trade Secret	5.70	
Phenol Resin	Trade Secret	Mold Compound	2.590	4.318	25,902		Phenol Resin	Trade Secret	3.60	
Carbon Black	1333-86-4	Mold Compound	0.144	0.240	1.439		Carbon Black	1333-86-4	0.20	
Copper	7440-50-8	Lead Frame	20.724	34.548	207,244			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.553	0.921	5,527	36.27	(mg) Total	Lead Frame	% of Total Weight	21.76
Silicon	7440-21-3	Lead Frame	0.098	0.163	979		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.022	0.036	218		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.363	0.605	3.632		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.146	0.244	1.463		Magnesium	7439-95-4	0.10	
Acrylic Resin	Trade secret	Die Attach	0.016	0.027	162		Silver	7440-22-4	1.67	
Polybutadiene derivative & Coplolymer	9003-17-2	Die Attach	0.012	0.021	124		μ	Total	100.00	
Acrylated EP-Resin	Trade secret	Die Attach	0.010	0.017	105	0.32	(mg) Total	Die Attach	% of Total Weight	0.19
Epoxy Resin	Trade secret	Die Attach	0.005	0.008	48	0.02	Silver	7440-22-4	77.00	0.10
Silicon	7440-21-3	Chip (Die)	2.550	4.251	25,500		Acrylic Resin	Trade secret	8.50	
Gold	7440-57-5	Wire Bond	0.490	0.817	4.900	Polybutadi	ene derivative & Coplolymer	9003-17-2	6.50	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.060	5.101	30,600	1 Olybuldus	Acrylated EP-Resin	Trade secret	5.50	
100	1440 01 0	TOTALS:		166.700	1.000.000					
		g Total Mass			,,	4.25	Epoxy Resin (mg) Total	Trade secret Total Chip (Die)	2.50 100.00 % of Total Weight	2.55
semiconductor device and its homogenous materials comp ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified via i	bly with EU Directive 20	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH			,,	4.25		Total	100.00	2.55
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via i hemical substance is absent from the list above, the chemi porated's knowledge and belief as of the date of this docur	bly with EU Directive 20 nternal design controls cal substance is NOT a nent, there is no credib	g Total Mass 102/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer	S Recast Dire to the best o	ective) and wi	th EU	4.25	(mg) Total	Total Chip (Die)	100.00 % of Total Weight	2.55
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via i hemical substance is absent from the list above, the chemi porated's knowledge and belief as of the date of this docur is not below the threshold of regulatory concern for any re- ing compounds used by Microchip meet the UL94 V0 flamm	ly with EU Directive 20 nternal design controls cal substance is NOT a nent, there is no credib gulatory scheme world- nability standard for pla	g Total Mass 102/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer- wide.	S Recast Dire to the best o tration of the	ective) and win of Microchip T e chemical sul	th EU	4.25	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight 100	2.55
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	IV with EU Directive 20 Internal design controls cal substance is NOT a nent, there is no credib julatory scheme world nability standard for pla astics/	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, lee reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to	S Recast Dire to the best o tration of the o obtain a tes	ective) and with the sective) and with the section of Microchip Transformer and the section of t	th EU echnology ostance, if		(mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via i hemical substance is absent from the list above, the chemi porated's knowledge and belief as of the date of this docur is not below the threshold of regulatory concern for any re- ling compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped certain "reels" may be made from PVC plastic. cochip Technology Incorporated believes the information in original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has I plier information is often protected from disclosure as trade mation is provided only as estimates of the average weight	Ity with EU Directive 20 Internal design controls cal substance is NOT a nent, there is no credib gulatory scheme world- nability standard for pla astics/ are made from polyvin this form concerning s its knowledge and beli ween compiled based o secrets and some info of these parts and the	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH a, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concern- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Im lef, as of the date listed in this form. Microchip Technology In the anges provided in Material Safety Data Sheets prov rmation may not have been provided by subcontract assa average weight of anticipated significant toxic metals cor	S Recast Dire to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw i mblers and i	ective) and win of Microchip Tri o chemical sul at report at g slip on the of semiconduct ad cannot gua material suppi aw material suppi	th EU echnology ostance, if outer box or devices in rantee the liers. uppliers.		(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via i hemical substance is absent from the list above, the chemi porated's knowledge and belief as of the date of this docur is not below the threshold of regulatory concern for any re- ling compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has I blier information is often protected from disclosure as trade mation is provided only as estimates of the average weight de trace levels of dopants, metals, and non-metal materials ochip Technology Incorporated does not provide any warra anties provided by Microchip Technology Incorporated and	by with EU Directive 20 Internal design controls cal substance is NOT a nent, there is no credib gulatory scheme world- hability standard for pla- astics/ are made from polyvin this form concerning s its knowledge and beli- been compiled based o secrets and some info of these parts and the contained within silico- nty, express or implied	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH as, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concern- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets prov rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals cor on devices (silicon IC) in the finished parts.	S Recast Dire to the best o tration of the o obtain a tes ld the packin corporated's y Incorporat ided by raw r mblers and i nponents. Th	ective) and win f Microchip Tr e chemical sul t report at g slip on the semiconduct ed cannot gua material suppi raw material s iese estimates usive, limited	th EU echnology ostance, if outer box tor devices in rantee the liers. uppliers. s do not product		(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via i hemical substance is absent from the list above, the chemi rporated's knowledge and belief as of the date of this docur is not below the threshold of regulatory concern for any reg ling compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped	Ity with EU Directive 20 Internal design controls cal substance is NOT a nent, there is no credib gulatory scheme world- hability standard for pla astics/ are made from polyvin this form concerning s its knowledge and beli- seen compiled based o secrets and some info of these parts and the contained within silico nty, express or implied its subsidiaries are co ges to Material Conten	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. in intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concern- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho- ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology In the fanges provided in Material Safety Data Sheets prov- ummation may not have been provided by subcontract assa- average weight of anticipated significant toxic metals cor- on devices (silicon IC) in the finished parts. I, with respect to the information provided in this declarati- ntained in Microchip's standard terms and conditions of s- t Declarations and shall not be liable for any damages, dir	S Recast Dire to the best o tration of the o obtain a tes ld the packin corporated's y Incorporated's y Incorporated y Incorporated ided by raw miblers and imponents. Th on. The excluale. These ar ect or indirec	ective) and wind of Microchip Tri- e chemical sult it report at in g slip on the of ection of the semiconduct ed cannot gua material suppi raw material s esse estimates usive, limited e provided in ct, consequen	th EU echnology ostance, if outer box tor devices in rantee the liers. uppliers. s do not product Microchip's tial or	0.82	(mg) Total Doped Silicon (mg) Total Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.49

				nation Base A opper Alloy (C	-		Package Homog	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Devic	ce Type: 100 LQFP 1	4x14x1.4mm (H7)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	348.46	(mg) Total	Mold Compound	% ot Total Weight	71.68
Silica, vitreous (or fused)	60676-86-0	Mold Compound	60.928	296.189	609,280		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	6.236	30.316	62.362		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.301	20.907	43,008		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.215	1.045	2,150		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	23.626	114.855	236,264			Total	100.00	
Iron	7439-89-6	Lead Frame	0.581	2.825	5,812	120.22	(mg) Total	Lead Frame	% of Total Weight	24.73
Silver	7440-22-4	Lead Frame	0.471	2.290	4,711		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.031	0.150	309		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.020	0.099	204		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.332	1.614	3,320		Zinc	7440-66-6	0.13	
ANHYDRIDE	Trade Secret	Die Attach	0.036	0.175	360		Phosphorous	7723-14-0	0.08	
EPOXY RESIN	Trade Secret	Die Attach	0.032	0.156	320			Total	100.00	-
Silicon	7440-21-3	Chip (Die)	1.640	7.973	16,400	1.94	(mg) Total	Die Attach	% of Total Weight	0.4
Doped Gold	7440-57-5	Wire Bond	0.430	2.090	4,300		Silver (Ag)	7440-22-4	83.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.120	5.445	11,200		ANHYDRIDE	Trade Secret	9.00	
		TOTALS:	100.000	486.130	1,000,000		EPOXY RESIN	Trade Secret	8.00	
	0.4861	g Total Mass						Total	100.00	
		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Direc	ctive) and with	EU	7.97	Total (mg)	Chip (Die)	% of Total Weight	1.64
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifie). ed via internal design contro	s, supplier declarations, and /or analytical test data.		ŗ	-	7.97	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	1.64
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the <i>c</i> corporated's knowledge and belief as of the date of this). ed via internal design contro chemical substance is NOT document, there is no credi	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	to the best of	Microchip Tee	chnology	7.97		7440-21-3	100	1.64
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the of corporated's knowledge and belief as of the date of this ay, is not below the threshold of regulatory concern for a olding compounds used by Microchip meet the UL94 V0). ed via internal design contro chemical substance is NOT document, there is no credi any regulatory scheme world) flammability standard for p	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	to the best of tration of the	Microchip Tee chemical subs	chnology	2.09		7440-21-3	100	0.43
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi). ed via internal design contro chemical substance is NOT document, there is no credi any regulatory scheme work of lammability standard for p cals/plastics/	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide.	to the best of tration of the obtain a test	Microchip Tec chemical subs	chnology stance, if		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the e tecorporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi ertain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informati teir original packing materials is true and correct to the b ompleteness and accuracy of data in this form because le). ed via internal design contro chemical substance is NOT document, there is no credi any regulatory scheme work flammability standard for p cals/plastics/ ipped are made from polyvi ion in this form concerning pest of its knowledge and be it has been compiled based screts and some information	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen l-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology Im lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an to of anticipated significant toxic metals components. These	to the best of tration of the o obtain a test Id the packing corporated's y Incorporated ided by raw m of raw materi	Microchip Ter chemical subs report at g slip on the or semiconducto d cannot guara naterial supplic	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is		(mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the of accorporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi ertain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informati information is often protected from disclosure as trade se rovided only as estimates of the average weight of these f dopants, metals, and non-metal materials contained wit licrochip Technology Incorporated does not provide any). dv via internal design contro chemical substance is NOT document, there is no credi any regulatory scheme work of flammability standard for p cals/plastics/ iipped are made from polyvi ion in this form concerning best of its knowledge and be it has been compiled based excrets and some information parts and the average weig thin silicon devices (silicon warranty, express or implie	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen l-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology Im lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an to of anticipated significant toxic metals components. These	to the best of tration of the o obtain a test Id the packing corporated's i y incorporate ided by raw m nd raw materi se estimates d on. The exclu	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guar naterial supplie ial suppliers. In do not include usive, limited p	chnology stance, if r devices in antee the ers. Supplier nformation is trace levels roduct		(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the e corporated's knowledge and belief as of the date of this y, is not below the threshold of regulatory concern for a olding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemic te protective "tubes" in which the specific product is shi rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informati eir original packing materials is true and correct to the b impleteness and accuracy of data in this form because dopants, metals, and non-metal materials contained wit crochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporate otations, sales order acknowledgement, and invoices.). ed via internal design contro chemical substance is NOT document, there is no credi any regulatory scheme work of lammability standard for p cals/plastics/ iipped are made from polyvi ion in this form concerning pest of its knowledge and be it has been compiled based excrets and some information parts and the average weig thin silicon devices (silicon warranty, express or implie ed and its subsidiaries are co r changes to Material Conte the users' reliance on the ir	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen l-wide. lastics. You can access the UL iQTM family of databases to hyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by ROHS in Microchip Technology Im lief, as of the date listed in this form. Microchip Technology on the ranges provided by subcontract assemblers an to of anticipated significant toxic metals components. Thes C) in the finished parts.	to the best of tration of the obtain a test ld the packing corporated's of y Incorporated ided by raw materi se estimates d on. The exclu ale. These are sect or indirect	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara aterial supplies. I al supplies al supplies to not include sive, limited p e provided in M	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	2.09	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.43

	npe: 100 LQFP 1	4x14x1.4mm H7	-	nation Base opper Alloy ((•	geneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Markir and/or Pkg. Labeling e3
	•	"Contained In"	% Total			491.77	(mg) Total	Mold Compound	% ot Total Weight	84.73
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm				5	
Silica Fused	60676-86-0	Mold Compound	74.791	434.088	747,912		Silica Fused	60676-86-0	88.27	
Epoxy Resin	Trade Secret	Mold Compound	5.287	30.687	52,872		Epoxy Resin	Trade Secret	6.24	
Phenol Resin	Trade Secret	Mold Compound	4.397	25.523	43,975		Phenol Resin	Trade Secret	5.19	
Carbon Black	1333-86-4	Mold Compound	0.254	1.475	2,542		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	12.172	70.645	121,718			Total		
Nickel	7440-02-0	Lead Frame	0.325	1.884	3,246	74.18	(mg) Total	Lead Frame	% of Total Weight	12.78
Silver	7440-22-4	Lead Frame	0.213	1.238	2,133		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.058	0.334	575		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.013	0.074	128		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.031	0.179	308		Silicon	7440-21-3	0.45	
Acrylic Resin	Trade secret	Die Attach	0.003	0.020	34		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.001	0.006	10			Total		
Acrylated EP-Resin	Trade secret	Die Attach	0.002	0.013	22	0.23	(mg) Total	Die Attach	% of Total Weight	0.04
Polybutadiene derivative & Coplolymer	9003-17-2	Die Attach	0.003	0.015	26		Silver	7440-22-4	77.00	
Silicon	7440-21-3	Chip (Die)	0.570	3.308	5,700		Acrylic Resin	Trade secret	8.50	
Copper	7440-50-8	Wire Bond	0.098	0.570	983		Epoxy Resin	Trade secret	2.50	
Palladium	7440-05-3	Wire Bond	0.002	0.010	18		Acrylated EP-Resin	Trade secret	5.50	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.780	10.331	17,800	Polybi	utadiene derivative & Cople	9003-17-2	7	
		TOTALS:	100.000	580,400	1.000.000			Total		
		TOTAES.	100.000	300.400	1,000,000			Iotai	100.00	
	rials comply with EU	g Total Mass Directive 2002/95/EC (RoHS Directive), EU Directive 2011,			,,	3.31	(mg) Total Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	
EU Directive 2002/53/EC (End-of-Life Vehicles (EL	rials comply with EU _V) Directive).	g Total Mass	/65/EU (RoHS		,,	3.31		Chip (Die)	% of Total Weight	
EU Directive 2002/53/EC (End-of-Life Vehicles (EL pliance with the above EU Directives has been ve hemical substance is absent from the list above, nology Incorporated's knowledge and belief as of nical substance, if any, is not below the threshold	rials comply with EU _V) Directive). rified via internal des the chemical substan f the date of this doct of regulatory concer	g Total Mass Directive 2002/95/EC (RoHS Directive), EU Directive 2011, ign controls, supplier declarations, and /or analytical test ice is NOT an intentional ingredient in the semiconductor ument, there is no credible reason to believe that the una n for any regulatory scheme world-wide.	/65/EU (RoHS : data. device and, t voidable impt	Recast Direct	tive) and Microchip ation of the			Chip (Die) 7440-21-3	% of Total Weight	
EU Directive 2002/53/EC (End-of-Life Vehicles (EL pliance with the above EU Directives has been ve hemical substance is absent from the list above, nology Incorporated's knowledge and belief as of nical substance, if any, is not below the threshold	rials comply with EU -V) Directive). rified via internal des the chemical substan f the date of this doct of regulatory concer 4 V0 flammability star	g Total Mass Directive 2002/95/EC (RoHS Directive), EU Directive 2011, ign controls, supplier declarations, and /or analytical test ice is NOT an intentional ingredient in the semiconductor ument, there is no credible reason to believe that the una	/65/EU (RoHS : data. device and, t voidable impt	Recast Direct	tive) and Microchip ation of the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
EU Directive 2002/53/EC (End-of-Life Vehicles (EL pliance with the above EU Directives has been ve hemical substance is absent from the list above, i nology Incorporated's knowledge and belief as of incal substance, if any, is not below the threshold ing compounds used by Microchip meet the UL94 //ul.com/global/eng/pages/offerings/industries/ch protective "tubes" in which the specific product is box and certain "reels" may be made from PVC	rials comply with EU -V) Directive). rified via internal des the chemical substan f the date of this doct of regulatory concer 4 V0 flammability stan emicals/plastics/ s shipped are made fi plastic.	g Total Mass Directive 2002/95/EC (RoHS Directive), EU Directive 2011, ign controls, supplier declarations, and /or analytical test ice is NOT an intentional ingredient in the semiconductor ument, there is no credible reason to believe that the una n for any regulatory scheme world-wide. indard for plastics. You can access the UL iQTM family of or rom polyvinyl chloride (PVC) plastic. "Window envelopes"	/65/EU (RoHS deta. device and, t voidable impu databases to " used to hold	Recast Direct o the best of I irity concentra obtain a test r I the packing	tive) and Microchip ation of the report at		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98 2	0.1
EU Directive 2002/53/EC (End-of-Life Vehicles (EL pliance with the above EU Directives has been ve hemical substance is absent from the list above, nology Incorporated's knowledge and belief as of nical substance, if any, is not below the threshold ing compounds used by Microchip meet the UL94 //ul.com/global/eng/pages/offerings/industries/cho protective "tubes" in which the specific product is box and certain "reels" may be made from PVC jochip Technology Incorporated believes the infor conductor devices in their original packing mater nology Incorporated cannot guarantee the comply y Data Sheets provided by raw material suppliers add by subcontract assemblers and raw material	rials comply with EU -V) Directive). rified via internal des the chemical substan f the date of this doct of regulatory concer 4 V0 flammability stan emicals/plastics/ s shipped are made fn plastic. mation in this form co ials is true and correc- leteness and accurac s. Supplier information suppliers. Information	g Total Mass Directive 2002/95/EC (RoHS Directive), EU Directive 2011, ign controls, supplier declarations, and /or analytical test ice is NOT an intentional ingredient in the semiconductor iment, there is no credible reason to believe that the una n for any regulatory scheme world-wide.	/65/EU (RoHS device and, t voidable impo databases to " used to hold schnology Inc sted in this fo d on the rang some inform these parts ar	Recast Direct o the best of I urity concentra obtain a test r I the packing orporated's rm. Microchip es provided ir ation may not d the averag	tive) and Microchip ation of the report at slip on the have been e weight of		Copper Copper	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98 2	0.1
EU Directive 2002/53/EC (End-of-Life Vehicles (EL pliance with the above EU Directives has been ve- hemical substance is absent from the list above, i nology incorporated's knowledge and belief as of ical substance, if any, is not below the threshold ing compounds used by Microchip meet the UL94 //ul.com/global/eng/pages/offerings/industries/chi- orotective "tubes" in which the specific product is box and certain "reels" may be made from PVC bochip Technology Incorporated believes the infor- conductor devices in their original packing mater nology Incorporated cannot guarantee the compl y Data Sheets provided by raw material suppliers ded by subcontract assemblers and raw material ipated significant toxic metals components. Thes on IC) in the finished parts.	rials comply with EU -V) Directive). rified via internal des the chemical substan f the date of this doct of regulatory concer 4 V0 flammability stan emicals/plastics/ s shipped are made fn plastic. mation in this form co ials is true and correc- leteness and accurac s. Supplier information e estimates do not in any warranty, expres-	g Total Mass Directive 2002/95/EC (RoHS Directive), EU Directive 2011, ign controls, supplier declarations, and /or analytical test ice is NOT an intentional ingredient in the semiconductor iment, there is no credible reason to believe that the una n for any regulatory scheme world-wide. Idard for plastics. You can access the UL iQTM family of rom polyvinyl chloride (PVC) plastic. "Window envelopes" procerning substances restricted by RoHS in Microchip Te ct to the best of its knowledge and belief, as of the date if y of data in this form because it has been compiled base n is often protected from disclosure as trade secrets and n is provided only as estimates of the average weight of clude trace levels of dopants, metals, and non-metal mat s or implied, with respect to the information provided in te i subsidiaries are contained in Microchip's standard term	65/EU (RoHS data. device and, t voidable impu databases to " used to hold schnology Inc sted in this fo d on the rang some inform these parts a erials contain his declaratic	Recast Direct o the best of I urity concentra obtain a test r I the packing : orporated's rrm. Microchip es provided ir ation may not nd the average ed within silic n. The exclus	tive) and Microchip ation of the report at slip on the b Material have been e weight of son devices sive, limited	0.58	Copper Copper	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98 2	0.1
EU Directive 2002/53/EC (End-of-Life Vehicles (EL pliance with the above EU Directives has been ve- hemical substance is absent from the list above, nology Incorporated's knowledge and belief as of ical substance, if any, is not below the threshold ing compounds used by Microchip meet the UL94 //ul.com/global/eng/pages/offerings/industries/ch- borotective "tubes" in which the specific product is box and certain "reels" may be made from PVC pochip Technology Incorporated believes the infor conductor devices in their original packing mater nology Incorporated cannot guarantee the compl y Data Sheets provided by raw material suppliers ded by subcontract assemblers and raw material ipated significant toxic metals components. Thes on IC) in the finished parts. bochip Technology Incorporated does not provide uct warranties provided by Microchip Technology ded in Microchip's quotations, sales order ackno chip disclaims any duty to notify users of update	rials comply with EU -V) Directive). rified via internal des the chemical substan f the date of this docu of regulatory concer 4 V0 flammability stan emicals/plastics/ s shipped are made find plastic. mation in this form co ials is true and corre- leteness and accurace 5. Supplier informatio suppliers. Informatio e estimates do not in any warranty, express / Incorporated and its we so r changes to Mate parties as a result of	g Total Mass Directive 2002/95/EC (RoHS Directive), EU Directive 2011, ign controls, supplier declarations, and /or analytical test ice is NOT an intentional ingredient in the semiconductor ument, there is no credible reason to believe that the una n for any regulatory scheme world-wide. indard for plastics. You can access the UL iQTM family of or rom polyvinyl chloride (PVC) plastic. "Window envelopes" oncerning substances restricted by RoHS in Microchip Te ct to the best of its knowledge and belief, as of the date li y of data in this form because it has been compiled base n is often protected from disclosure as trade secrets and in sis provided only as estimates of the average weight of clude trace levels of dopants, metals, and non-metal mat s or implied, with respect to the information provided in t is subsidiaries are contained in Microchip's standard term oices.	65/EU (RoHS data. device and, t voidable impu databases to " used to hold chonology Inc sted in this for d on the rang some inform these parts a erials contain his declaratic s and conditi lamages, dire	Recast Direct o the best of l irity concentra obtain a test r it the packing a orporated's orporated's orm. Microchip es provided ir ation may not d the average ed within silic in. The exclus ons of sale. Th ct or indirect,	tive) and Microchip ation of the report at slip on the have been e weight of con devices sive, limited hese are	0.58	Copper Copper Palladium	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.1

				nation Base A pper Alloy (C	-			nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markir and/or Pkg. Labeling
Semiconductor Device 1	ype: PH 144 (Lead)				-			-		e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	439.61	(mg) Total	Mold Compound	% ot Total Weight	68.23
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.996	373.665	579.955		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.936	38.246	59.360		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.094	26.376	40,938		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.205	1.319	2.047		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	26.955	173.669	269,547		Garbon Black	Total		
Tin	7440-31-5	Lead Frame	0.069	0.446	692	178.28	(mg) Total	Lead Frame	% of Total Weight	27.67
		Edd Hano	0.000	0.110	002	170.20	(ing) rotai	Lead I fame	/o or rotar weight	21.07
Silver	7440-22-4	Lead Frame	0.527	3.396	5,271		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.050	0.321	498		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.069	0.446	692		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.357	2.300	3,570		Zinc	7440-66-6	0.18	
Epoxy resin	Trade Secret	Die Attach	0.102	0.657	1,020		Chromium	7440-47-3	0.25	
Aliphatic acid anhydride / TPU-ALET	Trade Secret	Die Attach	0.051	0.329	510		Chironnan	Total		
Silicon	7440-21-3	Chip (Die)	2.090	13.466	20,900	3.29	(Die Attach	% of Total Weight	0.51
						3.29	(mg) Total			0.51
Gold	7440-57-5	Wire Bond	0.280	1.804	2,800		Silver	7440-22-4	70	
Tin	7440-31-5 Pla	lating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.220	7.860	12,200		Epoxy resin	Trade Secret	20	
		TOTALS:	100.000	644.300	1,000,000	Aliphatic a	acid anhydride / TPU-ALET		10	
	06442 a	Total Mass						Total	100.00	
2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directive 2003	92/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	IS Recast Direc	tive) and with	EU	13.47	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	2.09
2002/53/EC (End-of-Life Vehicles (ELV) Directive). nce with the above EU Directives has been verified vi nical substance is absent from the list above, the cher	mply with EU Directive 200; a internal design controls, mical substance is NOT an	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Roh supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and	, to the best of	Microchip Teo	hnology	13.47		,	100	2.09
2002/53/EC (End-of-Life Vehicles (ELV) Directive). nce with the above EU Directives has been verified vi nical substance is absent from the list above, the cher ated's knowledge and belief as of the date of this doc	mply with EU Directive 2003 a internal design controls, mical substance is NOT an cument, there is no credible	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity conce	, to the best of	Microchip Teo	hnology	13.47		7440-21-3	100	2.09
2002/53/EC (End-of-Life Vehicles (ELV) Directive). nce with the above EU Directives has been verified vi nical substance is absent from the list above, the cher ated's knowledge and belief as of the date of this doc ot below the threshold of regulatory concern for any i	mply with EU Directive 2003 ia internal design controls, mical substance is NOT an sument, there is no credible regulatory scheme world-w mmability standard for plas	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity conce	, to the best of ntration of the	Microchip Teo chemical subs	hnology	13.47		7440-21-3	100	2.09
2002/53/EC (End-of-Life Vehicles (ELV) Directive). nce with the above EU Directives has been verified vi nical substance is absent from the list above, the cher ated's knowledge and belief as of the date of this doc ot below the threshold of regulatory concern for any is compounds used by Microchip meet the UL94 V0 flar com/global/eng/pages/offerings/industries/chemicalsus ective "tubes" in which the specific product is shipper	mply with EU Directive 2003 ia internal design controls, . mical substance is NOT an sument, there is no credible regulatory scheme world-w mmability standard for plas /plastics/	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity concervide.	, to the best of ntration of the o obtain a test	Microchip Teo chemical subs report at	chnology stance, if		Doped Silicon	7440-21-3 Total	100 100.00 % of Total Weight 100	
2002/53/EC (End-of-Life Vehicles (ELV) Directive). Ince with the above EU Directives has been verified vinical substance is absent from the list above, the cher rated's knowledge and belief as of the date of this doc ot below the threshold of regulatory concern for any in compounds used by Microchip meet the UL94 V0 flar com/global/eng/pages/offerings/industries/chemicals, ective "tubes" in which the specific product is shippe reels" may be made from PVC plastic. ip Technology Incorporated believes the information in ginal packing materials is true and correct to the best eness and accuracy of data in this form because it has ion is often protected from disclosure as trade secret d only as estimates of the average weight of these par its, metals, and non-metal materials contained within ip Technology Incorporated does not provide any war es provided by Microchip Technology Incorporated and secret for any and any as a store and protected from disclosure as trade secret d only as estimates of the average weight of these par es provided by Microchip Technology Incorporated any and protected from the protected from the secret for any and protected from the secret for any and provide any war es provided by Microchip Technology Incorporated any and protected from the secret for any and protected from the secret for any sec	mply with EU Directive 2003 ia internal design controls, mical substance is NOT an cument, there is no credible regulatory scheme world-w mmability standard for plas /plastics/ ed are made from polyvinyl in this form concerning sut of its knowledge and belief is been compiled based on its and the average weight i silicon devices (silicon IC) rranty, express or implied, v	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concervide. stics. You can access the UL iQTM family of databases t I chloride (PVC) plastic. "Window envelopes" used to he bstances restricted by RoHS in Microchip Technology II f, as of the date listed in this form. Microchip Technology In the tanges provided in Material Safety Data Sheets pro yay not have been provided by subcontract assemblers i of anticipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's i yy Incorporate vided by raw m and raw materi se estimates d	Microchip Tec chemical subs report at slip on the ou cannot guara aterial supplie al suppliers. Ir o not include sive, limited pi	chnology stance, if iter box and r devices in intee the ers. Supplier iformation is trace levels roduct		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100 100.00 % of Total Weight 100	
2002/53/EC (End-of-Life Vehicles (ELV) Directive). nnce with the above EU Directives has been verified vinical substance is absent from the list above, the cherated's knowledge and belief as of the date of this doc ot below the threshold of regulatory concern for any incompounds used by Microchip meet the UL94 V0 flar com/global/eng/pages/offerings/industries/chemicals. etctive "tubes" in which the specific product is shipperreels" may be made from PVC plastic. ip Technology Incorporated believes the information i ginal packing materials is true and correct to the best is offer protected from disclosure as trade secret d only as estimates of the average weight of these parts, metals, and non-metal materials contained within ip Technology Incorporated does not provide any war ns, sales order acknowledgement, and invoices.	mply with EU Directive 200; ia internal design controls, mical substance is NOT an cument, there is no credible regulatory scheme world-w mmability standard for plas /plastics/ ed are made from polyvinyl in this form concerning sut of its knowledge and belief is been compiled based on its and the average weight i silicon devices (silicon IC) rranty, express or implied, v nd its subsidiaries are cont anges to Material Content I users' reliance on the infor	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concer- vide. stics. You can access the UL iQTM family of databases t I chloride (PVC) plastic. "Window envelopes" used to be bstances restricted by RoHS in Microchip Technology II f, as of the date listed in this form. Microchip Technology I the fanges provided in Material Safety Data Sheets pro- iay not have been provided by subcontract assemblers i of anticipated significant toxic metals components. The j in the finished parts. with respect to the information provided in this declarat	, to the best of ntration of the o obtain a test old the packing ncorporated's : yy Incorporate yy incorporate mand raw materi ase estimates d tion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial suppliers. Ir o not include sive, limited pi provided in N , consequentia	chnology itance, if iter box and r devices in intee the rs. Supplier iformation is trace levels roduct licrochip's al or	1.80	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100 100.00	0.28
a 2002/53/EC (End-of-Life Vehicles (ELV) Directive). nnce with the above EU Directives has been verified vi nical substance is absent from the list above, the cher rated's knowledge and belief as of the date of this doc ot below the threshold of regulatory concern for any i compounds used by Microchip meet the UL94 V0 flar com/global/eng/pages/offerings/industries/chemicals. rective "tubes" in which the specific product is shippe reels" may be made from PVC plastic. ip Technology Incorporated believes the information i joni soften protected from disclosure as trade secret only settimates of the average weight of these parts, metals, and non-metal materials contained within ip Technology Incorporated does not provide any war es provided by Microchip Technology Incorporated at ns, sales order acknowledgement, and invoices. ip disclaims any duty to notify users of updates or chi- e, suffered by users or third parties as a result of the	mply with EU Directive 200; ia internal design controls, mical substance is NOT an cument, there is no credible regulatory scheme world-w mmability standard for plas /plastics/ ed are made from polyvinyl in this form concerning sut of its knowledge and belief is been compiled based on its and the average weight i silicon devices (silicon IC) rranty, express or implied, v nd its subsidiaries are cont anges to Material Content I users' reliance on the infor	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concervide. stics. You can access the UL iQTM family of databases t I chloride (PVC) plastic. "Window envelopes" used to he bstances restricted by RoHS in Microchip Technology II of the ranges provided in Material Safety Data Sheets pro iay not have been provided by subcontract assemblers of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarat tained in Microchip's standard terms and conditions of Declarations and shall not be liable for any damages, di	, to the best of ntration of the o obtain a test old the packing ncorporated's : yy Incorporate yy incorporate mand raw materi ase estimates d tion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial suppliers. Ir o not include sive, limited pi provided in N , consequentia	chnology itance, if iter box and r devices in intee the rs. Supplier iformation is trace levels roduct licrochip's al or	1.80	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00	0.28

MICROCHIP Semiconductor Device Type:	PQ 44 (Lead)	NQFP (10x10x2mm) (T8)		nation Base A oper Alloy (C			•	mogeneous Materials (e.g. pc boards, displ		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	314.89	(mg) Total	Mold Compound	% ot Total Weight	64.87
Silica, vitreous (or fused)	60676-86-0	Mold Compound	55.140	267.653	551,395		Silica, vitreous (or fused)	60676-86-0	85.00	1
Epoxy Resin	Trade Secret	Mold Compound	5.644	27.395	56.437		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.892	18.893	38,922		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.195	0.945	1,946		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	27.106	131.573	271.056			Total	100.00	4
Nickel	7440-02-0	Lead Frame	0.723	3.509	7.229	138.15	(mg) Total	Lead Frame	% of Total Weight	28.46
Silver	7440-22-4	Lead Frame	0.475	2.306	4,750		Copper	7440-50-8	95.24	20110
Silicon	7440-21-3	Lead Frame	0.128	0.622	1,281		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.028	0.138	285		Silver	7440-22-4	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.556	2.699	5.561		Silicon	7440-21-3	0.45	
ANHYDRIDE	Trade Secret	Die Attach	0.060	0.293	603		Magnesium	7439-95-4	0.10	
EPOXY RESIN	Trade Secret	Die Attach	0.054	0.260	536			Total	100.00	
Silicon	7440-21-3	Chip (Die)	3.970	19.271	39,700	3.25	(mg) Total	Die Attach	% of Total Weight	0.67
Gold	7440-57-5	Wire Bond	0.210	1.019	2,100	0.20	Silver (Ag)	7440-22-4	83	0.0.
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.820	8.834	18,200		ANHYDRIDE	Trade Secret	9	
		TOTALS:	100.000	485.410	1.000.000		EPOXY RESIN	Trade Secret	8	
	0 / 85/	g Total Mass			,,			Total	100.00	
This semiconductor device and its homogenous materials comply w Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		<u>v</u>	IS Recast Direct	ctive) and with	EU	19.27	Total (mg)	Chip (Die)	% of Total Weight	3.97
Compliance with the above EU Directives has been verified via interr	al design contro	Is sumplier declarations, and /or analytical test data					Doped Silicon	7440-21-3	100	1
	iai acoigii conti c	is, supplier acolarations, and for analytical test data.					Doped Onicon			
If a chemical substance is absent from the list above, the chemical s Incorporated's knowledge and belief as of the date of this document any, is not below the threshold of regulatory concern for any regular Molding compounds used by Microchip meet the UL94 V0 flammabil	, there is no cred ory scheme work ity standard for p	ible reason to believe that the unavoidable impurity conce d-wide.	entration of the	chemical sub		1.02	(mg) Total	Total Wire Bond	100.00 % of Total Weight	
http://ul.com/global/eng/pages/offerings/industries/chemicals/plastic						1.02	(ing) rotai	Wire Bolia	% of Total Weight	0.21
The protective "tubes" in which the specific product is shipped are a certain "reels" may be made from PVC plastic.	nade from polyvi	nyl chloride (PVC) plastic. "Window envelopes" used to he	old the packing	slip on the ou	iter box and		Doped Gold	7440-57-5	100	
								Total	100.00	
Microchip Technology Incorporated believes the information in this their original packing materials is true and correct to the best of its I completeness and accuracy of data in this form because it has been information is often protected from disclosure as trade secrets and provided only as estimates of the average weight of these parts and of dopants, metals, and non-metal materials contained within silicon	nowledge and be compiled based some information the average weig	elief, as of the date listed in this form. Microchip Technolo on the ranges provided in Material Safety Data Sheets pro may not have been provided by subcontract assemblers ht of anticipated significant toxic metals components. The	gy Incorporate ovided by raw n and raw materi	d cannot guar naterial suppli al suppliers. I	antee the ers. Supplier nformation is					
Microchip Technology Incorporated does not provide any warranty, warranties provided by Microchip Technology Incorporated and its s quotations, sales order acknowledgement, and invoices.						8.83	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for	% of Total Weight	1.82
Microchip disclaims any duty to notify users of updates or changes otherwise, suffered by users or third parties as a result of the users' of this Certificate of Compliance for semiconductor products.				· •			Tin	7440-31-5	100.00	
								Total	100.00	
						485.410				100.000

Semiconductor Devi	Semiconductor Device Type: 128 MQFP 14x20x2.7mm (ER) Basic Substance "Contained In" Silica Fused 60676-86-0 Mold Compound Epoxy Resin Trade Secret Mold Compound Phenol Resin Trade Secret Mold Compound Carbon Black 1333-86-4 Mold Compound Copper 7440-60-8 Lead Frame Nickel 7440-02-0 Lead Frame Silver 7440-22-4 Lead Frame Silver 7440-22-4 Lead Frame Silver 7440-22-4 Lead Frame Silver 7440-22-4 Die Attach Silver 7440-22-4 Die Attach Diluent Trade secret Die Attach Diluent Trade secret Die Attach Silicon 7440-21-3 Chip (Die) Copper 7440-31-6 Wire Bond Copper palladium coated (CuPc Bilicon 7440-21-3 Chip (Die) Copper 7440-31-5 Wire Bond Copper palladium coated (CuPc Tin 7440-31-5 Wire Bond	x20x2.7mm (ER)		nation Base / pper Alloy (C			JEDEC 97 Product Marking and/or Pkg. Labeling e3			
			% Total			1196.61	(mg) Total	Mold Compound	% ot Total Weight	66.82
			Weight	mg/part	ppm		(),	•	•	
			58.982	1056.250	589,820		Silica Fused	60676-86-0	88.27	
			4.170	74.669	41,696		Epoxy Resin	Trade Secret	6.24	
			3.468	62.104	34,680		Phenol Resin	Trade Secret	5.19	
			0.200	3.590	2,005		Carbon Black	1333-86-4	0.30	
			25.658	459.482	256,579			Total	100.00	
			0.684	12.254	6,843	482.44	(mg) Total	Lead Frame	% of Total Weight	26.94
			0.450	8.052	4,496		Copper	7440-50-8	95.24	
			0.121	2.171	1,212		Nickel	7440-02-0	2.54	
			0.027	0.482	269		Silver	7440-22-4	1.67	
			0.053	0.940	525		Silicon	7440-21-3	0.45	
			0.007	0.125	70		Magnesium	7439-95-4	0.10	
			0.007	0.125	70			Total	100.00	
Hardener	Trade secret	Die Attach	0.004	0.063	35	1.25	(mg) Total	Die Attach	% of Total Weight	0.07
Silicon	7440-21-3	Chip (Die)	4.760	85.242	47,600		Silver	7440-22-4	75	
Copper		Wire Bond Copper palladium coated (CuPd)	0.246	4.399	2,456		Epoxy Resin	Trade secret	10.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.004	0.078	44		Diluent	Trade secret	10.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.160	20.773	11,600		Hardener	Trade secret	5.00	
		TOTALS:	100.000	1,790.800	1,000,000			Total	100.00	
	1 7908	a Total Mass			ľ	85.24	Total (mar)			
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	e).		S Recast Direc	ctive) and with	n EU	00.24	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	4.76
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive ppliance with the above EU Directives has been verifi- chemical substance is absent from the list above, the prorated's knowledge and belief as of the date of this	e). ed via internal design contro e chemical substance is NOT s document, there is no cred	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer	to the best of	Microchip Te	chnology .	4.48				0.25
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive ppliance with the above EU Directives has been verifi chemical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 V ://ul.com/global/eng/pages/offerings/industries/chem	e). ed via internal design contro e chemical substance is NOT s document, there is no cred any regulatory scheme worl 0 flammability standard for p icals/plastics/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer d-wide. lastics. You can access the UL iQTM family of databases t	to the best of ntration of the o obtain a test	Microchip Te chemical sub report at	chnology stance, if		Doped Silicon	7440-21-3 Total Wire Bond Copper palladium	100 100.00	
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ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive ppliance with the above EU Directives has been veriff hormical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 V //ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is sl ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informa r original packing materials is true and correct to the pleteness and accuracy of data in this form because mation is often protected from disclosure as trade s vided only as estimates of the average weight of thes opants, metals, and non-metal materials contained w rochip Technology Incorporated does not provide amy rochip Technology Incorporated does not provide amy rochip Technology Incorporated does not provide amy rochip Technology Incorporated does not provide amy ranties provided by Microchip Technology Incorporat tations, sales order acknowledgement, and invoices.	e). ed via internal design controd e drain internal design controd s document, there is no cred any regulatory scheme worl 0 flammability standard for p iicals/plastics/ hipped are made from polyvi tion in this form concerning best of its knowledge and b it has been compiled based ecrets and some information e parts and the average weig ithin silicon devices (silicon y warranty, express or implie ted and its subsidiaries are o	Is, supplier declarations, and <i>l</i> or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer 4-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology Ir filef, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The	to the best of htration of the o obtain a test old the packing acorporated's a y Incorporated rided by raw m and raw materi se estimates d ion. The exclus sale. These are	Microchip Te chemical sub report at g slip on the o semiconducto d cannot guar naterial suppli al suppliers. I lo not include sive, limited p	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels product Microchip's		Copper	Total Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
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Basic Substance Contained in Ye i total Import Ye i total Import Ye i total Media Compound		Type: MS and UA	8 (Lead) MSOP 3x3mm (A3)		nation Base A opper Alloy (C				jeneous Materials: . pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Lated Subtracted (LAS Number)Case (LAS Number) (Number)Subtraction (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import (Number)Import 			"Contained In"				20.43	(mg) Total	Mold Compound	% of Total Weight	79.8
$ \frac{1}{1600 \text{ const}} \frac{1}{1$			•	•			20140			•	
Phenolog Real Totals Source Mad Compound 4.078 1.044 40.776 Clincon Black 1333-864 Mad Compound 0.057 2.077 Canon Black 1333-864 Mad Compound 0.057 2.077 Canon Black 1333-864 Mad Compound 0.057 2.087 reg trait Loss Frame 10.0 </td <td></td>											
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Copyright 7440-05-8 Lead Frame 01031 2.560 10031 2.660 10031 <td></td>											
$\frac{10^{\circ}}{10^{\circ}} \frac{1763}{10^{\circ}} \frac{1760}{10^{\circ}} \frac{1760}{10$								Carbon Black			
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cicture 2002/33/EC (End-of-Life Vehicles (ELV) Directive). Dipded Silcon 7/440/2/13 100 upliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Total 100.00 chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology protector's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if (LuPd) 0.05 (mg) Total Copper, alladum % of Total Weight 0.2 ing compounds used by Microchip meet the ULA 40 filammability standard for plastics. You can access the UL IOTM family of databases to obtain a test report at the specific product is shipped are made from polyvinyl choride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and an "reeis" may be made from PVC plastic. 0.05 (mg) Total Copper, alladum 7440-05-3 2 rotipin 1 packing materials struptiers. Total Total 100.00 100.00 100.00 rotipin 2 packing materials struptiers. Total Copper, alladum 7440-05-3 2 100.00 100.00 rotipin 2 packing materials struptiers. some information in may no thave been provided by substance is semiconductor devices in reginal packing materials struptiers. Some information			g Total Mass				1 9 2				
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erwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5 100.00	active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this dd is not below the threshold of regulatory concern for any lding compounds used by Microchip meet the UL94 V0 ft Jul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bee poleteness and accuracy of data in this form because it h ormation is often protected from disclosure as trade secr vided only as estimates of the average weight of these p	via internal design contro emical substance is NOT ocument, there is no cred y regulatory scheme work ammability standard for p Is/plastics/ ped are made from polyvi n in this form concerning st of its knowledge and be has been compiled based ets and some information arts and the average weig	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen d-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lifef, as of the date listed in this form. Microchip Technology on may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The	to the best of tration of the o obtain a test Id the packing corporated's y Incorporate ided by raw m nd raw materi	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guar naterial supplic	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is		(mg) Total	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
Total 100.00	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this dd is not below the threshold of regulatory concern for any iding compounds used by Microchip meet the UL94 V0 ft o://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bes inpleteness and accuracy of data in this form because it h romation is often protected from disclosure as trade secr vided only as estimates of the average weight of these pu lopants, metals, and non-metal materials contained withi rochip Technology Incorporated does not provide any w ranties provided by Microchip Technology Incorporated trations, sales order acknowledgement, and invoices.	via internal design contro nemical substance is NOT ocument, there is no cred y regulatory scheme work ammability standard for p Is/plastics/ ped are made from polyvi n in this form concerning st of its knowledge and be has been compiled based ets and some information arts and the average weig in silicon devices (silicon 'arranty, express or implie and its subsidiaries are c	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen d-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In blief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s	to the best of tration of the o obtain a test ld the packing corporated's y Incorporate ided by raw m and raw materi se estimates o ion. The exclu iale. These are	Microchip Ter chemical subs report at g slip on the or semiconducto d cannot guar naterial suppliers. It do not include sive, limited p e provided in N	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct hicrochip's	0.05	Doped Silicon (mg) Total Copper Palladium (mg) Total	7440-21-3 Total Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 98 2 100.00	0.2
	active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this dd is not below the threshold of regulatory concern for any iding compounds used by Microchip meet the UL94 V0 ft J/ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bes poleteness and accuracy of data in this form because it h ormation is often protected from disclosure as trade secr vided only as estimates of the average weight of these p lopants, metals, and non-metal materials contained withi rochip Technology Incorporated does not provide any w ranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or c erwise, sulfered by users or third parties as a result of the	via internal design contro emical substance is NOT ocument, there is no cred y regulatory scheme work ammability standard for p Is/plastics/ ped are made from polyvi n in this form concerning st of its knowledge and be has been compiled based ets and some information arts and the average weig in silicon devices (silicon arranty, express or implie and its subsidiaries are c changes to Material Conte ie users' reliance on the ir	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen d-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by ROHS in Microchip Technology In life, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s nt Declarations and shall not be liable for any damages, dir	to the best of tration of the o obtain a test ld the packing corporated's y Incorporate ided by raw m and raw materi se estimates o ion. The exclu- iale. These are ect or indirect	Microchip Ter chemical subs report at g slip on the or semiconducto d cannot guara aterial supplies ial supplies do not include sive, limited p e provided in M	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct dicrochip's al or	0.05	Copper Silicon (mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100 100.00 % of Total Weight 98 2 2 100.00 % of Total Weight 100.00	0.2

				nation Base / pper Alloy (C				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: UN 10 (Lead)									e3
		"Contained In"	% I otal			6.66	(mg) Total	Mold Compound	% ot Total Weight	28.71
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm			•	-	
Silica, vitreous	60676-86-0	Mold Compound	24.404	5.662	244,035		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	1.758	0.408	17,585		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	1.758	0.408	17,585		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.703	0.163	7,034		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.086	0.020	861		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	42.830	9.937	428,299			Total	100.00	
Nickel	7440-02-0	Lead Frame	1.142	0.265	11,422	10.43	(mg) Total	Lead Frame	% of Total Weight	44.97
Silver	7440-22-4	Lead Frame	0.751	0.174	7,505		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.202	0.047	2,024		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.045	0.010	450		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.601	0.139	6,006		Silicon	7440-21-3	0.45	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.139	0.032	1,386		Magnesium	7439-95-4	0.10	
Treated silica	Trade Secret	Die Attach	0.015	0.004	154			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.015	0.004	154	0.18	(mg) Total	Die Attach	% of Total Weight	0.77
Silicon	7440-21-3	Chip (Die)	2,800	0.650	28.000		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.680	0.158	6,800		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	22.070	5,120	220,700		Treated silica	Trade Secret	2	
		TOTALS:	100.000	23.200	1,000,000	Het	erocyclic organic compound	Trade Secret	2	
	0 0232	g Total Mass						Total	100.00	
semiconductor device and its homogenous materials comply tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			IS Recast Direc	tive) and with	EU	0.65	Total (mg)			
						0.00	rotal (mg)	Chip (Die)	% of Total Weight	2.8
pliance with the above EU Directives has been verified via int	•		to the best of	Microchin Te	shalogy	0.00	Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	2.8
pliance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ling compounds used by Microchip meet the UL94 V0 flamma	al substance is NOT a ent, there is no credil latory scheme world ability standard for pl	in intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce- wide.	ntration of the	chemical sub		0.16		7440-21-3	100	2.8
pliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar	al substance is NOT a ent, there is no credii llatory scheme world ability standard for pl stics/	in intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t	ntration of the o obtain a test	chemical sub report at	stance, if		Doped Silicon	7440-21-3 Total	100	
npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica orporated's knowledge and belief as of the date of this docume , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma o://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in th r original packing materials is true and correct to the best of it npleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts as lopants, metals, and non-metal materials contained within silic	I substance is NOT a ent, there is no credil latory scheme world bility standard for pl stics/ re made from polyvir is form concerning s s knowledge and bel en compiled based o kd some information nd the average weigl	In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t yl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology II ief, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers in t of anticipated significant toxic metals components. The	ntration of the o obtain a test old the packing ncorporated's : yy Incorporated vided by raw m and raw materi	chemical sub- report at slip on the or semiconductor d cannot guar- aterial suppli al suppliers. I	stance, if uter box and r devices in antee the ers. Supplier nformation is		(mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
mpliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica proprated's knowledge and belief as of the date of this docume , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma o://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in th r original packing materials is true and correct to the best of it spleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts at	I substance is NOT a ent, there is no credil latory scheme world billity standard for pl stics/ re made from polyvir is form concerning s is knowledge and be en compiled based o d some information nd the average weigi con devices (silicon I ky, express or implier	In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t yl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology li ief, as of the date listed in this form. Microchip Technolog in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers in t of anticipated significant toxic metals components. The C) in the finished parts.	ntration of the o obtain a test old the packing ncorporated's : yy Incorporate vided by raw m and raw materi sse estimates d	chemical sub report at slip on the o semiconducto d cannot guar aterial supplie al suppliers. I lo not include sive, limited p	stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica proprated's knowledge and belief as of the date of this docume , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma c//ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in th ropleteness and accuracy of data in this form because it has be impleteness and accuracy of the average weight of these parts an lopants, metals, and non-metal materials contained within silic rochip Technology Incorporated does not provide any warrant ranties provided by Microchip Technology Incorporated and it	Il substance is NOT a ant, there is no credil latory scheme world ubility standard for pl stics/ re made from polyvir is form concerning s is knowledge and bel en compiled based d id some information nd the average weigh con devices (silicon I ty, express or implier is subsidiaries are co es to Material Conter	In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t yl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology in itef, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets pro may not have been provided by subcontract assemblers in to of anticipated significant toxic metals components. The C) in the finished parts. 4, with respect to the information provided in this declarat intained in Microchip's standard terms and conditions of t Declarations and shall not be liable for any damages, di	ntration of the o obtain a test old the packing vided by raw m and raw materi use estimates d tion. The exclu sale. These are rect or indirect	chemical sub- report at semiconductor a cannot guar- aterial suppli- al suppliers. I lo not include sive, limited p provided in M , consequenti	stance, if r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.16	(mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.68
npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica prorated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information in the original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts ai opants, metals, and non-metal materials contained within silic rochip Technology Incorporated does not provide any warrant ranties provided by Microchip Technology Incorporated and it tations, sales order acknowledgement, and invoices. Tochip disclaims any duty to notify users of updates or change rwise, suffered by users or third parties as a result of the use	Il substance is NOT a ant, there is no credil latory scheme world ubility standard for pl stics/ re made from polyvir is form concerning s is knowledge and bel en compiled based d id some information nd the average weigh con devices (silicon I ty, express or implier is subsidiaries are co es to Material Conter	In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t yl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology in itef, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets pro may not have been provided by subcontract assemblers in to of anticipated significant toxic metals components. The C) in the finished parts. 4, with respect to the information provided in this declarat intained in Microchip's standard terms and conditions of t Declarations and shall not be liable for any damages, di	ntration of the o obtain a test old the packing vided by raw m and raw materi use estimates d tion. The exclu sale. These are rect or indirect	chemical sub- report at semiconductor a cannot guar- aterial suppli- al suppliers. I lo not include sive, limited p provided in M , consequenti	stance, if r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.16	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.68

Semiconductor Device	e Type: Pand PA 8 (∟	ead) PDIP (Small Outline300") (C4)		nation Base A pper Alloy (C			•	geneous Materials: g. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	388.39	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	279.638	574.560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	42.723	87.780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	27.187	55.860		Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.586	27.187	55,860		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.995	9.710	19,950		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.399	1.942	3,990		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	10.031	48.823	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	1.201	2,468	51.10	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.974	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.064	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.550	2.678	5,502		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.110	0.535	1,100		Phosphorous	7723-14-0	0.08	
Diluent	3101-60-8	Die Attach	0.055	0.268	550			Total	100.00	
Phenolic hardener	Trade secret	Die Attach	0.022	0.107	220	3.65	(mg) Total	Die Attach	% of Total Weight	0.75
Amine type hardener	827-43-0	Die Attach	0.011	0.054	110	0.00		7440-22-4	73.36	0.10
Dicyandiamide	461-58-5	Die Attach	0.002	0.009	18		Epoxy Resir		14.67	
Silicon	7440-21-3	Chip (Die)	7.500	36.503	75,000			t 3101-60-8	7.33	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.956	1.965		Phenolic hardene		2.93	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.017	35		Amine type hardene		1.47	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500		Dicyandiamide		0.24	
1111	1440 01 0	TOTALS:	100.000	486.700	1.000.000		Dicyandiamide	Total	100.00	
	0.4007		100.000	400.700	1,000,000			i Utai	100.00	
		g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	tive) and with	EU	36.50	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
s semiconductor device and its homogenous materials ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified	comply with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	tive) and with	EU	36.50			100	7.5
cctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl prporated's knowledge and belief as of the date of this d	comply with EU Directive 20 via internal design controls nemical substance is NOT a ocument, there is no credib	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer	to the best of	Microchip Teo	chnology .	36.50 0.97		7440-21-3	100	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f	comply with EU Directive 20 via internal design controls nemical substance is NOT a ocument, there is no credib y regulatory scheme world- lammability standard for pla	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer	to the best of ntration of the	Microchip Teo	chnology .		Doped Silicon	7440-21-3 Total Wire Bond - Copper, palladium	100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). hpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	comply with EU Directive 20 via internal design controls nemical substance is NOT a ocument, there is no credib y regulatory scheme world- lammability standard for pla ils/plastics/	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer wide.	to the best of htration of the o obtain a test	Microchip Tee chemical subs report at	chnology stance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd)	100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatic r original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these p	comply with EU Directive 20 via internal design controls nemical substance is NOT a ocument, there is no credili y regulatory scheme world- lammability standard for pla las/plastics/ oped are made from polyvin n in this form concerning s st of its knowledge and beli has been compiled based o rets and some information 1 arts and the average weigh	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer wide. Isstics. You can access the UL iQTM family of databases t vl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir ef, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets pro nay not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	to the best of htration of the o obtain a test old the packing hcorporated's a y incorporated rided by raw m	Microchip Tec chemical subs report at slip on the or semiconducto I cannot guara aterial suppliers. II	chnology stance, if uter box and ir devices in antee the ers. Supplier nformation is		Copper Silicon	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	100 100.00 % of Total Weight 98	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar lding compounds used by Microchip meet the UL94 V0 f 5://ul.com/global/eng/pages/offerings/industries/chemica a protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatio ir original packing materials is true and correct to the be mpleteness and accuracy of data in this form because it cromation is often protected from disclosure as trade sec vided only as estimates of the average weight of these p dopants, metals, and non-metal materials contained with crochip Technology Incorporated does not provide any v	via internal design controls via internal design controls nemical substance is NOT a ocument, there is no credili yr egulatory scheme world- lammability standard for pla las/plastics/ oped are made from polyvin n in this form concerning s st of its knowledge and beli has been compiled based o rets and some information 1 arts and the average weigh in silicon devices (silicon 10 varranty, express or implied	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer wide. Isstics. You can access the UL iQTM family of databases t vl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir ef, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets pro nay not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	to the best of htration of the o obtain a test old the packing hcorporated's a y incorporate rided by raw m and raw materi se estimates d ion. The exclusion	Microchip Tec chemical subs report at slip on the or semiconducto I cannot guara aterial suppliers. In o not include sive, limited p	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct		Copper Silicon	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information or original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec rided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any v ranties provided by Microchip Technology Incorporatec tations, sales order acknowledgement, and invoices.	comply with EU Directive 20 via internal design controls nemical substance is NOT a ocument, there is no credili yr egulatory scheme world- lammability standard for pla is/plastics/ sped are made from polyvin n in this form concerning s st of its knowledge and beli has been compiled based o rets and some information i arts and the average weigh in silicon devices (silicon 10 varranty, express or implied l and its subsidiaries are co changes to Material Conten ne users' reliance on the inf	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer wide. Isstics. You can access the UL iQTM family of databases t vl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir ef, as of the date listed in this form. Microchip Technology Ir to fantige provided in Material Safety Data Sheets pro nay not have been provided by subcontract assemblers a to f anticipated significant toxic metals components. The c) in the finished parts.	to the best of tration of the o obtain a test old the packing ncorporated's a y Incorporate vided by raw m and raw materi se estimates d ion. The exclu- sale. These are rect or indirect	Microchip Tec chemical subs report at slip on the or semiconducto cannot guara aterial supplie al suppliers. In o not include sive, limited p provided in N consequentia	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels trace levels roduct flicrochip's al or	0.97	Doped Silicon (mg) Total Copper Palladium	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100 100.00 % of Total Weight 98 2 2 100.00 % of Total Weight 100.00	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), upliance with the above EU Directives has been verified themical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ting compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any v anties provided by Microchip Technology Incorporatec ations, sales order acknowledgment, and invoices.	comply with EU Directive 20 via internal design controls nemical substance is NOT a ocument, there is no credili yr egulatory scheme world- lammability standard for pla is/plastics/ sped are made from polyvin n in this form concerning s st of its knowledge and beli has been compiled based o rets and some information i arts and the average weigh in silicon devices (silicon 10 varranty, express or implied l and its subsidiaries are co changes to Material Conten ne users' reliance on the inf	20295/EC (RoHS Directive), EU Directive 2011/65/EU (RoH a, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer- wide. Instics. You can access the UL iQTM family of databases the pl chloride (PVC) plastic. "Window envelopes" used to her abstances restricted by RoHS in Microchip Technology In ef, as of the date listed in this form. Microchip Technology In the ranges provided by subcontract assemblers in at of anticipated significant toxic metals components. The c) in the finished parts. with respect to the information provided in this declaration tained in Microchip's standard terms and conditions of its Declarations and shall not be liable for any damages, diit.	to the best of tration of the o obtain a test old the packing ncorporated's a y Incorporate vided by raw m and raw materi se estimates d ion. The exclu- sale. These are rect or indirect	Microchip Tec chemical subs report at slip on the or semiconducto cannot guara aterial supplie al suppliers. In o not include sive, limited p provided in N consequentia	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels trace levels roduct flicrochip's al or	0.97	Copper Copper Palladium (mg) Total (mg) Total	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	100 100.00 % of Total Weight 98 2 2 100.00 % of Total Weight	0.2

Міскоснір					ation Base A oper Alloy (C			Package Home	ogeneous Materials		JEDEC 97 Product Markin and/or Pkg. Labeling
Ser	miconductor Device Type:	14 PDIP .300"	(D2 / DF) "Contained In"	% Iotal	1						e3
Basic Sul	ubstance	CAS Number	Sub-Component	Weight	mg/part	ppm	760.73	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused S	Silica	60676-86-0	Mold Compound	57.456	547.728	574,560		Fused Silica	60676-86-0	72.0000	
Metal Hydr		Trade Secret	Mold Compound	8.778	83.681	87,780		Metal Hydro Oxide	Trade Secret	11.00000	
Epoxy F		Trade Secret	Mold Compound	5.586	53.251	55,860		Epoxy Resin	Trade Secret	7.00000	
Phenol F		Trade Secret	Mold Compound	5.586	53.251	55,860		Phenol Resin	Trade Secret	7.00000	
SiO		14808-60-7	Mold Compound	1.995	19.018	19,950		SiO2	14808-60-7	2.50	
Carbon		1333-86-4	Mold Compound	0.399	3.804	3,990		Carbon Black	1333-86-4	0.50	
Cop		7440-50-8	Lead Frame	10.031	95.630	100,314			Total		
Iro		7439-89-6	Lead Frame	0.247	2.352	2,468	100.10	(mg) Total	Lead Frame	% of Total Weight	10.5
Silv		7440-22-4	Lead Frame	0.200	1.907	2,000		Copper	7440-50-8	95.54	
Zin		7440-66-6	Lead Frame	0.013	0.125	131		Iron	7439-89-6	2.35	
Phosph		7723-14-0	Lead Frame	0.009	0.083	87		Silver	7440-22-4	1.91	
Silve		7440-22-4	Die Attach	0.550	5.245	5,502		Zinc	7440-66-6	0.13	
Epoxy I		9003-36-5	Die Attach	0.110	1.049	1,100		Phosphorous	7723-14-0	0.08	
Dilue		3101-60-8	Die Attach	0.055	0.524	550			Total	100.00	
Phenolic h		Trade secret	Die Attach	0.022	0.209	220	7.15	(mg) Total	Die Attach	% of Total Weight	0.75
Amine type		827-43-0	Die Attach	0.011	0.105	110		Silver	7440-22-4	73.36	
Dicyand		461-58-5	Die Attach	0.002	0.017	18		Epoxy Resin	9003-36-5	14.67	
Silic		7440-21-3	Chip (Die)	7.500	71.498	75,000		Diluent	3101-60-8	7.33	
Cop		7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.197	1.873 0.033	1,965		Phenolic hardener	Trade secret	2.93	
Pallac		7440-05-3 7440-31-5	Wire Bond Copper palladium coated (CuPd)	0.004	11.916	35 12,500		Amine type hardener	827-43-0	1.47	
11	1	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour					Dicyandiamide	461-58-5		
			TOTALS:	100.000	953.300	1,000,000			Total	100.00	
		0.9533	g Total Mass				71.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
ective 2002/53/EC (End-of-Life V	/ehicles (ELV) Directive).		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Direct	tive) and with	EU		Doped Silicon	7440-21-3 Total	100 100.00	
•			s, supplier declarations, and /or analytical test data.						Total	100.00	
orporated's knowledge and belie		t, there is no credil	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide.				1.91	(mg) Total	Wire Bond Copper palladium	% of Total Weight	0.2
1. d'an an a	ochip meet the UL94 V0 flammabi								coated (CuPd)	, o or rotal trongin	
	erings/industries/chemicals/plastic		lastics. You can access the UL iQTM family of databases to	o obtain a test i	report at			Copper	7440-50-8	98	
tp://ul.com/global/eng/pages/offer	erings/industries/chemicals/plasti e specific product is shipped are	cs/	astics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to hol		•	uter box and		Copper	. ,		
tp://ul.com/global/eng/pages/offer e protective "tubes" in which the rtain "reels" may be made from F crochip Technology Incorporatec eir original packing materials is tr mpleteness and accuracy of data formation is often protected from ovided only as estimates of the a	erings/industries/chemicals/plasti e specific product is shipped are PVC plastic. In delieves the information in this true and correct to the best of its is a in this form because it has been n disclosure as trade secrets and	cs/ made from polyvin form concerning s knowledge and bel n compiled based o some information t the average weigh	hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an t of anticipated significant toxic metals components. Thes	old the packing ncorporated's s yy Incorporated vided by raw ma and raw materia	slip on the ou emiconducto cannot guara aterial supplie al suppliers. In	or devices in antee the ers. Supplier nformation is			7440-50-8	98	
p://ul.com/global/eng/pages/offer e protective "tubes" in which the train "reels" may be made from P crochip Technology Incorporate eri original packing materials is tr mpleteness and accuracy of data ormation is often protected from voided only as estimates of the a dopants, metals, and non-metal i crochip Technology Incorporated	erings/industries/chemicals/plastie e specific product is shipped are PVC plastic. d believes the information in this true and correct to the best of its I a in this form because it has been n disclosure as trade secrets and average weight of these parts and materials contained within silicor d does not provide any warranty, Technology Incorporated and its i	cs/ made from polyvin form concerning s knowledge and bel n compiled based c some information t the average weigt n devices (silicon l express or implied	hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an t of anticipated significant toxic metals components. Thes	old the packing ncorporated's s yy Incorporated vided by raw ma and raw materia se estimates do ion. The exclus	slip on the or emiconducto cannot guara aterial supplie al suppliers. In o not include vive, limited p	r devices in antee the ers. Supplier nformation is trace levels roduct	11.92		7440-50-8 7440-05-3	98	1.25
p://ul.com/global/eng/pages/offer a protective "tubes" in which the tain "reels" may be made from F crochip Technology Incorporated ir original packing materials is tr mpleteness and accuracy of data ormation is often protected from wided only as estimates of the a dopants, metals, and non-metal i crochip Technology Incorporated rranties provided by Microchip T otations, sales order acknowledg crochip disclaims any duty to no	erings/industries/chemicals/plastie e specific product is shipped are PVC plastic. ad believes the information in this true and correct to the best of its I a in this form because it has been n disclosure as trade secrets and average weight of these parts and materials contained within silicor ad does not provide any warranty, Technology Incorporated and its gement, and invoices. otify users of updates or changes at parties as a result of the users'	cs/ made from polyvin form concerning s knowledge and bel n compiled based o some information I the average weigh n devices (silicon I express or implied subsidiaries are co to Material Conten	yl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology Im lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an to of anticipated significant toxic metals components. Thes C) in the finished parts.	old the packing ncorporated's s y Incorporated yided by raw ma- ided by raw ma- se estimates do ion. The exclus sale. These are rect or indirect,	slip on the ou emiconducto cannot guara aterial suppliers. Il o not include ive, limited p provided in N consequentia	r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	11.92	Palladium	7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin /	98 2 100.00	1.25
b://ul.com/global/eng/pages/offer protective "tubes" in which the lain "reels" may be made from F rochip Technology Incorporated in original packing materials is tr pleteness and accuracy of data yrmation is often protected from vided only as estimates of the ar lopants, metals, and non-metal I rochip Technology Incorporated ranties provided by Microchip T tations, sales order acknowledd rochip disclaims any duty to no rewise, suffered by users or thir	erings/industries/chemicals/plastie e specific product is shipped are PVC plastic. ad believes the information in this true and correct to the best of its I a in this form because it has been n disclosure as trade secrets and average weight of these parts and materials contained within silicor ad does not provide any warranty, Technology Incorporated and its gement, and invoices. otify users of updates or changes at parties as a result of the users'	cs/ made from polyvin form concerning s knowledge and bel n compiled based o some information I the average weigh n devices (silicon I express or implied subsidiaries are co to Material Conten	hyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an to of anticipated significant toxic metals components. Thes C) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s at Declarations and shall not be liable for any damages, dire	old the packing ncorporated's s y Incorporated yided by raw ma- ided by raw ma- se estimates do ion. The exclus sale. These are rect or indirect,	slip on the ou emiconducto cannot guara aterial suppliers. Il o not include ive, limited p provided in N consequentia	r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	11.92	Palladium (mg) Total	7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	98 2 100.00 % of Total Weight	1.25

MICROCHIP Semiconductor Device		Outline 2001 (DE (DI)		ation Base A oper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	stype. To Diff (smail	"Contained In"	% Iotal							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	887.93	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	639.313	574,560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	97.673	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	62.155	55,860		Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.586	62.155	55,860		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.995	22.198	19,950		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.399	4.440	3,990		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	10.031	111.620	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	2.746	2,468	116.83	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	2.226	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.146	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.096	87		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.563	6.259	5,625		Zinc	7440-66-6	0.13	
Diester Resin	94-80-4	Die Attach	0.113	1.252	1,125		Phosphorous	7723-14-0	0.08	
Functionalized Urethane Resin	72869-86-4	Die Attach	0.038	0.417	375			Total	100.00	
Epoxy Resin	9003-36-5	Die Attach	0.019	0.209	188	8.35	(mg) Total	Die Attach	% of Total Weight	0.75
Epoxy Resin	13561-08-5	Die Attach	0.019	0.209	188		Silver	7440-22-4	75.00	
Silicon	7440-21-3	Chip (Die)	7.500	83.453	75.000		Diester Resin	94-80-4	15.00	
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.197	2,186	1,965	Fu	nctionalized Urethane Resin	72869-86-4	5.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.004	0.039	35		Epoxy Resin	9003-36-5	2.50	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	13.909	12.500		Epoxy Resin	13561-08-5	2.50	
		TOTALS:	100.000	1.112.700	1.000.000			Total	100.00	
	1 1107 /	g Total Mass		.,	.,,	83.45	Total (mg)	Chip (Die)	% of Total Weight	7.5
is semiconductor device and its homogenous materials		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Direc	tive) and with	EU	03.43			ý	7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		······			-		Doped Silicon	7440-21-3	100	
ompliance with the above EU Directives has been verified	via internal design controls	, supplier declarations, and /or analytical test data.					-	Total	100.00	
corporated's knowledge and belief as of the date of this de	ocument, there is no credib	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concern				2.23	(mg) Total	Wire Bond Copper palladium		0.2
y, is not below the threshold of regulatory concern for an	y regulatory scheme world.	wide.			,	2.23	(ing) rotai	coated (CuPd)	% of Total Weight	0.2
olding compounds used by Microchip meet the UL94 V0 fl	lammability standard for pla		o obtain a test			2.23	Copper		% of Total Weight 98	0.2
pling compounds used by Microchip meet the UL94 V0 fl p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship	lammability standard for pla lls/plastics/	astics. You can access the UL iQTM family of databases to		report at		2.23		coated (CuPd)		0.2
olding compounds used by Microchip meet the UL94 V0 fl ttp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is ship ertain "reels" may be made from PVC plastic.	lammability standard for pla lls/plastics/ uped are made from polyviny	astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol	old the packing	report at slip on the or	iter box and	2.23	Copper	coated (CuPd) 7440-50-8	98	0.2
olding compounds used by Microchip meet the UL94 V0 fl p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatioo ir original packing materials is true and correct to the be mpleteness and accuracy of data in this form because it I formation is often protected from disclosure as trade secr ovided only as estimates of the average weight of these p	lammability standard for pla ls/plastics/ ped are made from polyviny n in this form concerning su st of its knowledge and beli has been compiled based or rets and some information n arts and the average weigh	astics. You can access the UL IQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology Im ief, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers ai t of anticipated significant toxic metals components. Thes	old the packing ncorporated's s ly Incorporated vided by raw m and raw materia	report at slip on the or eemiconducto cannot guara aterial supplie al suppliers. In	Iter box and r devices in Intee the Irs. Supplier Information is	223	Copper	coated (CuPd) 7440-50-8 7440-05-3	98	0.2
ny, is not below the threshold of regulatory concern for an lolding compounds used by Microchip meet the UL94 V0 fl ttp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is ship artain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the information leir original packing materials is true and correct to the be ompleteness and accuracy of data in this form because it h formation is often protected from disclosure as trade secr rovided only as estimates of the average weight of these p if dopants, metals, and non-metal materials contained with licrochip Technology Incorporated does not provide any w arranties provided by Microchip Technology Incorporated uotations, sales order acknowledgement, and invoices.	lammability standard for pla ls/plastics/ pped are made from polyviny in in this form concerning si st of its knowledge and beli has been compiled based or rets and some information n arts and the average weigh in silicon devices (silicon IC varranty, express or implied, and its subsidiaries are cor	astics. You can access the UL IQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers and t of anticipated significant toxic metals components. Thes C) in the finished parts. I, with respect to the information provided in this declarati- ntained in Microchip's standard terms and conditions of su	old the packing ncorporated's s y Incorporated y Incorporated ided by raw m and raw materia se estimates d ion. The exclus sale. These are	report at slip on the ou cannot guara aterial suppliers. In o not include sive, limited p provided in N	Iter box and r devices in Intee the ers. Supplier Iformation is trace levels roduct licrochip's	13.91	Copper	coated (CuPd) 7440-50-8 7440-05-3	98	1.25
olding compounds used by Microchip meet the UL94 V0 fl tp://ul.com/global/eng/pages/offerings/industries/chemica ee protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information eir original packing materials is true and correct to the be- mpleteness and accuracy of data in this form because it I formation is often protected from disclosure as trade secr ovided only as estimates of the average weight of these p dopants, metals, and non-metal materials contained with icrochip Technology Incorporated does not provide any w arranties provided by Microchip Technology Incorporated totations, sales order acknowledgement, and invoices.	lammability standard for pla ils/plastics/ yped are made from polyviny in in this form concerning si st of its knowledge and beli has been compiled based or rets and some information n arts and the average weigh in silicon devices (silicon IC varranty, express or implied, and its subsidiaries are cor changes to Material Content ne users' reliance on the info	astics. You can access the UL IQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology Im ief, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an t of anticipated significant toxic metals components. Thes C) in the finished parts.	old the packing ncorporated's s y Incorporated vided by raw m and raw materi- se estimates d ion. The exclus sale. These are rect or indirect,	report at slip on the ou cemiconducto cannot guara aterial supplie al suppliers. In o not include sive, limited p provided in N consequentia	Iter box and r devices in Intee the rs. Supplier iformation is trace levels roduct licrochip's al or		Copper Palladium	coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	98 2 100.00	
ding compounds used by Microchip meet the UL94 V0 fl o://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the be inpleteness and accuracy of data in this form because it h irmation is often protected from disclosure as trade secr vided only as estimates of the average weight of these p lopants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any w tranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or erwise, suffered by users or third parties as a result of th	lammability standard for pla ils/plastics/ yped are made from polyviny in in this form concerning si st of its knowledge and beli has been compiled based or rets and some information n arts and the average weigh in silicon devices (silicon IC varranty, express or implied, and its subsidiaries are cor changes to Material Content ne users' reliance on the info	astics. You can access the UL IQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology Im ief, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers at t of anticipated significant toxic metals components. These C) in the finished parts. I, with respect to the information provided in this declarati- ntained in Microchip's standard terms and conditions of si t Declarations and shall not be liable for any damages, dire	old the packing ncorporated's s y Incorporated vided by raw m and raw materi- se estimates d ion. The exclus sale. These are rect or indirect,	report at slip on the ou cemiconducto cannot guara aterial supplie al suppliers. In o not include sive, limited p provided in N consequentia	Iter box and r devices in Intee the rs. Supplier iformation is trace levels roduct licrochip's al or		Copper Palladium (mg) Total	coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	98 2 100.00 % of Total Weight	

Semiconductor Device Type:		(52 (50)		nation Base / pper Alloy (C			Package Homo	ogeneous Materials		JEDEC 97 Product Markin and/or Pkg. Labeling e3
Semiconductor Device Type:	10 FDIF .300"	(F37FP) "Contained In"	% Total	T						es
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	995.90	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	717.051	574.560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	109.549	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	69.713	55,860		Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.586	69.713	55,860		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.995	24.898	19,950		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.399	4.980	3,990		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	10.031	125.192	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	3.079	2,468	131.04	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	2,496	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.164	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.108	87		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.550	6.866	5,502		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.110	1.373	1,100		Phosphorous	7723-14-0	0.08	
Diluent	3101-60-8	Die Attach	0.055	0.686	550			Total	100.00	
Phenolic hardener	Trade secret	Die Attach	0.022	0.274	220	9.36	(mg) Total	Die Attach	% of Total Weight	0.75
Amine type hardener	827-43-0	Die Attach	0.011	0.138	110	3.30	Silver	7440-22-4	73.36	0.75
Dicyandiamide	461-58-5	Die Attach	0.002	0.022	18		Epoxy Resin	9003-36-5	14.67	
Silicon	7440-21-3	Chip (Die)	7.500	93.600	75.000		Diluent	3101-60-8	7.33	
Copper	7440-21-3	Wire Bond Copper palladium coated (CuPd)	0.197	2.452	1,965		Phenolic hardener	Trade secret	2.93	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd) Wire Bond Copper palladium coated (CuPd)	0.004	0.044	35		Amine type hardener	827-43-0	1.47	
Tin			1.250	15.600	12,500			461-58-5	0.24	
1111	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		1,248.000			Dicyandiamide			
		TOTALS:	100.000	1,248.000	1,000,000			Total		
		g Total Mass				93.60	Total (mg)	Chip (Die)	% of Total Weight	7.5
								1, 1, 1		
	Aut EU Directive 2	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ctive) and with	n EU		Doped Silicon	7440-21-3	100	
scetive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via inter			S Recast Dire	ctive) and with	n EU		Doped Silicon			
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified via inter shemical substance is absent from the list above, the chemical s rporated's knowledge and belief as of the date of this document	nal design control substance is NOT a t, there is no credil	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	to the best of	Microchip Te	chnology .	2.50	Doped Silicon (mg) Total	7440-21-3	100	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified via inter chemical substance is absent from the list above, the chemical s rporated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regular thing compounds used by Microchip meet the UL94 V0 flammabi	nal design control substance is NOT a s, there is no credil tory scheme world lity standard for pl	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide.	to the best of tration of the	Microchip Te chemical sub	chnology .	2.50		7440-21-3 Total Wire Bond Copper palladium	100 100.00	0.2
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	nal design control substance is NOT a s, there is no credil tory scheme work lity standard for pi cs/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to	to the best of tration of the o obtain a test	Microchip Te chemical sub report at	chnology stance, if	2.50	(mg) Total	7440-21-3 Total Wire Bond Copper palladium coated (CuPd)	100 100.00 % of Total Weight	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). hpliance with the above EU Directives has been verified via inter- chemical substance is absent from the list above, the chemical s- rporated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regula ding compounds used by Microchip meet the UL94 V0 flammabi //ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are ain "reels" may be made from PVC plastic. to chip Technology Incorporated believes the information in this original packing materials is true and correct to the best of its pleteness and accuracy of data in this form because it has been rmation is often protected from disclosure as trade secrets and vided only as estimates of the average weight of these parts and	nal design control substance is NOT a , there is no credit tory scheme work lity standard for pi :s/ made from polyvir form concerning a cowledge and be compiled based o some information the average weigi	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL IQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	to the best of tration of the o obtain a test Id the packing corporated's y Incorporate ided by raw m	Microchip Te chemical sub: report at g slip on the o semiconducto d cannot guar- naterial suppli- lat suppliers. I	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is	2.50	(mg) Total	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8	100 100.00 % of Total Weight 98	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via inter chemical substance is absent from the list above, the chemical su- prorated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regula ding compounds used by Microchip meet the UL94 V0 flammabi- t/ul.com/global/eng/pages/offerings/industries/chemicals/plasti- protective "tubes" in which the specific product is shipped are ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in this r original packing materials is true and correct to the best of its I pleteness and accuracy of data in this form because it has been rmation is often protected from disclosure as trade secrets and vided only as estimates of the average weight of these parts and opants, metals, and non-metal materials contained within silicor rochip Technology Incorporated does not provide any warranty, ranties provided by Microchip Technology Incorporated and its i	nal design control ubstance is NOT T i, there is no credii tory scheme world lity standard for pl cs/ made from polyvir form concerning s cnowledge and be compiled based of some information the average weigin a devices (silicon l express or implied	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- l-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In life, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts.	to the best of tration of the o obtain a test ld the packing corporated's y Incorporate ided by raw n nd raw mater se estimates o con. The exclu	Microchip Te chemical sub: report at g slip on the o semiconducto d cannot guar aterial suppli al suppliers. I lo not include sive, limited p	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels product	2.50	(mg) Total	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	0.2
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via inter hemical substance is absent from the list above, the chemical se porated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regula ing compounds used by Microchip meet the UL94 V0 flammabi //ul.com/global/eng/pages/offerings/industries/chemicals/plastic portective "tubes" in which the specific product is shipped are in "reels" may be made from PVC plastic. bochip Technology Incorporated believes the information in this original packing materials is true and correct to the best of its loteness and accuracy of data in this form because it has been mation is often protected from disclosure as trade secrets and ided only as estimates of the average weight of these parts and pants, metals, and non-metal materials contained within silicor bochip Technology Incorporated does not provide any warranty, anties provided by Microchip Technology Incorporated and its atoms, sales order acknowledgement, and invoices. bochip disclaims any duty to notify users of updates or changes wise, sulfered by users or third parties as a result of the user's	nal design control substance is NOT a , there is no credit tory scheme work lity standard for pi ss/ made from polyvir form concerning s cnowledge and be compiled based o some information the average weigh n devices (silicon l express or implies subsidiaries are co to Material Conter	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen J-wide. lastics. You can access the UL IQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by ROHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s nt Declarations and shall not be liable for any damages, dir	to the best of tration of the o obtain a test ld the packing corporated's y Incorporate ided by raw m nd raw mater se estimates o on. The exclu ale. These are ect or indirect	Microchip Te chemical sub: report at g slip on the o semiconducto d cannot guar aterial suppliers. I lo not include sive, limited p e provided in M	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels vroduct dicrochip's al or		(mg) Total Copper Palladium	7440-21-3 Total Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 98 2 100.00	
Active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Appliance with the above EU Directives has been verified via inter chemical substance is absent from the list above, the chemical sub proprated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regula ding compounds used by Microchip meet the UL94 V0 flammabi 'Jul.com/global/eng/pages/offerings/industries/chemicals/plasti protective "tubes" in which the specific product is shipped are	nal design control substance is NOT a , there is no credit tory scheme work lity standard for pi ss/ made from polyvir form concerning s cnowledge and be compiled based o some information the average weigh n devices (silicon l express or implies subsidiaries are co to Material Conter	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen J-wide. lastics. You can access the UL IQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by ROHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s nt Declarations and shall not be liable for any damages, dir	to the best of tration of the o obtain a test ld the packing corporated's y Incorporate ided by raw m nd raw mater se estimates o on. The exclu ale. These are ect or indirect	Microchip Te chemical sub: report at g slip on the o semiconducto d cannot guar aterial suppliers. I lo not include sive, limited p e provided in M	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels vroduct dicrochip's al or		(mg) Total Copper Palladium (mg) Total	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	100 100.00 % of Total Weight 98 2 100.00 % of Total Weight	

MICROCHIP					nation Base A pper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling
	Semiconductor Device	e Type: 20 PDIP .300" (G6 / GV) "Contained In"	% Total							e3
	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1207.29	(mg) Total	Mold Compound	% ot Total Weight	79.8
	Fused Silica	60676-86-0	Mold Compound	57.456	869.252	574,560		Fused Silica	60676-86-0	72.00	
	Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	132.802	87,780		Metal Hydro Oxide	Trade Secret	11.00	
	Epoxy Resin	Trade Secret	Mold Compound	5.586	84.511	55,860		Epoxy Resin	Trade Secret	7.00	
	Phenol Resin	Trade Secret	Mold Compound	5.586	84.511	55,860		Phenol Resin	Trade Secret	7.00	
	SiO2	14808-60-7	Mold Compound	1.995	30.182	19,950		SiO2	14808-60-7	2.50	
	Carbon Black	1333-86-4	Mold Compound	0.399	6.036	3,990		Carbon Black	1333-86-4	0.50	
	Copper	7440-50-8	Lead Frame	10.031	151.766	100,314			Total		
	Iron	7439-89-6	Lead Frame	0.247	3.733	2,468	158.85	(mg) Total	Lead Frame	% of Total Weight	10.5
	Silver	7440-22-4	Lead Frame	0.200	3.026	2,000		Copper	7440-50-8	95.54	
	Zinc	7440-66-6	Lead Frame	0.013	0.199	131		Iron	7439-89-6	2.35	
	Phosphorous	7723-14-0	Lead Frame	0.009	0.131	87		Silver	7440-22-4	1.91	
	Silver	7440-22-4	Die Attach	0.550	8.324	5,502		Zinc	7440-66-6	0.13	
	Epoxy Resin	9003-36-5	Die Attach	0.110	1.665	1,100		Phosphorous	7723-14-0	0.08	
	Diluent	3101-60-8	Die Attach	0.055	0.832	550			Total	100.00	
	Phenolic hardener	Trade secret	Die Attach	0.022	0.332	220	11.35	(mg) Total	Die Attach	% of Total Weight	0.75
	Amine type hardener	827-43-0	Die Attach	0.011	0.167	110		Silver	7440-22-4	73.36	
	Dicyandiamide	461-58-5	Die Attach	0.002	0.027	18		Epoxy Resin	9003-36-5	14.67	
	Silicon	7440-21-3	Chip (Die)	7.500	113.468	75,000		Diluent	3101-60-8	7.33	
	Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.197	2.973	1,965		Phenolic hardener	Trade secret	2.93	
	Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.004	0.053	35		Amine type hardener	827-43-0	1.47	
	Tin	7440-31-5 Pla	ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	18.911	12,500		Dicyandiamide	461-58-5	0.24	
			707110								
			TOTALS:	100.000	1,512.900	1,000,000			Total	100.00	
		1.5129 a		100.000	1,512.900	1,000,000	113.47	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	7.5
		comply with EU Directive 2002	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH		·	,,.	113.47		Chip (Die)	% of Total Weight	7.5
rective 2002/53/EC (Er	nd-of-Life Vehicles (ELV) Directive).	comply with EU Directive 200	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH		·	,,.	113.47	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight 100	7.5
ective 2002/53/EC (Er mpliance with the ab	nd-of-Life Vehicles (ELV) Directive). hove EU Directives has been verified	comply with EU Directive 2002 - I via internal design controls,	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data.	S Recast Direc	tive) and with	EU	113.47		Chip (Die) 7440-21-3 Total	% of Total Weight	7.5
rective 2002/53/EC (Er ompliance with the ab a chemical substance corporated's knowled	nd-of-Life Vehicles (ELV) Directive). pove EU Directives has been verified e is absent from the list above, the cl	comply with EU Directive 2003 d via internal design controls, hemical substance is NOT an document, there is no credible	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer	S Recast Direct	tive) and with Microchip Tec	EU	113.47 3.03		Chip (Die) 7440-21-3	% of Total Weight 100	0.2
rective 2002/53/EC (En ompliance with the ab- a chemical substance corporated's knowled y, is not below the thi olding compounds us	nd-of-Life Vehicles (ELV) Directive). hove EU Directives has been verified to absent from the list above, the cl lge and belief as of the date of this d reshold of regulatory concern for ar	comply with EU Directive 2003 I via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer	S Recast Direct	tive) and with Microchip Tec chemical subs	EU		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium	% of Total Weight 100 100.00	
rective 2002/53/EC (Er ompliance with the ab a chemical substance corporated's knowled y, is not below the thi olding compounds us ptp://ul.com/global/eng te protective "tubes" it	nd-of-Life Vehicles (ELV) Directive). sove EU Directives has been verified t is absent from the list above, the cl ige and belief as of the date of this d reshold of regulatory concern for ar sed by Microchip meet the UL94 V0 f s/pages/offerings/industries/chemica in which the specific product is ship	comply with EU Directive 2003 I via internal design controls, i hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer ide.	S Recast Direct to the best of ntration of the o obtain a test	tive) and with Microchip Tec chemical subs report at	EU chnology stance, if		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd)	% of Total Weight 100 100.00 % of Total Weight	
rective 2002/53/EC (En ompliance with the ab a chemical substance corporated's knowled y, is not below the thi- blding compounds us tp://ul.com/global/eng tp://ul.com/global/eng train "reels" may be n	nd-of-Life Vehicles (ELV) Directive). sove EU Directives has been verified is absent from the list above, the cl Ige and belief as of the date of this d reshold of regulatory concern for ar sed by Microchip meet the UL94 V0 f /pages/offerings/industries/chemic: in which the specific product is ship made from PVC plastic.	comply with EU Directive 2003 I via internal design controls, i hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/ pped are made from polyvinyl	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho	S Recast Direc to the best of ntration of the o obtain a test old the packing	tive) and with Microchip Tec chemical subs report at slip on the ou	EU chnology stance, if uter box and		Doped Silicon (mg) Total Copper	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98	
rective 2002/53/EC (Er mpliance with the ab a chemical substance sorporated's knowled y, is not below the thi lolding compounds us p://ul.com/global/eng e protective "tubes" in tain "reels" may ben crocchip Technology I bir original packing m mpleteness and accu ormation is often pro ovided only as estima	nd-of-Life Vehicles (ELV) Directive). sove EU Directives has been verified is absent from the list above, the cl ige and belief as of the date of this d reshold of regulatory concern for ar- sed by Microchip meet the UL94 V0 f y/pages/offerings/industries/chemica in which the specific product is ship made from PVC plastic. Incorporated believes the information aterials is true and correct to the be- irracy of data in this form because it tected from disclosure as trade sec	comply with EU Directive 2002 I via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sut est of its knowledge and belief has been compiled based on parts and the average weight of	Total Mass 295/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho pstances restricted by RoHS in Microchip Technology In i, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	S Recast Direct to the best of htration of the o obtain a test old the packing acorporated's a y Incorporated rided by raw m	tive) and with Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial suppliers. Ir	EU chnology stance, if iter box and r devices in intee the ers. Supplier iformation is		Doped Silicon (mg) Total Copper	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98 2	
ective 2002/53/EC (Er mpliance with the ab chemical substance orporated's knowled y, is not below the thi Iding compounds us p://ul.com/global/eng e protective "tubes" i tain "reels" may be n crochip Technology I ii original packing m mpleteness and accu ormation is often pro ovided only as estima dopants, metals, and crochip Technology I rranties provided by	nd-of-Life Vehicles (ELV) Directive). pove EU Directives has been verified is absent from the list above, the cl ige and belief as of the date of this d reshold of regulatory concern for ar sed by Microchip meet the UL94 V0 f g/pages/offerings/industries/chemica in which the specific product is ship made from PVC plastic. Incorporated believes the informatic haterials is true and correct to the be arracy of data in this form because it betected from disclosure as trade sec ates of the average weight of these f I non-metal materials contained with Incorporated does not provide any v	comply with EU Directive 2002 I via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sut est of its knowledge and belief has been compiled based on rets and some information ma parts and the average weight o hin silicon devices (silicon IC) warranty, express or implied, v	Total Mass 295/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho pstances restricted by RoHS in Microchip Technology In i, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	S Recast Direct to the best of tration of the o obtain a test old the packing the corporated's is y Incorporated's rided by raw m and raw materi se estimates d ion. The exclusion	tive) and with Microchip Tec chemical subs report at slip on the ou semiconductor d cannot guara aterial suppliers. Ir o not include sive, limited pi	EU chnology stance, if iter box and r devices in antee the ers. Supplier aformation is trace levels roduct		Doped Silicon (mg) Total Copper	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98 2	
ective 2002/53/EC (Er mpliance with the ab chemical substance orporated's knowled i, is not below the thi ding compounds us ://ul.com/global/eng protective "tubes" i ratin "reels" may be n rochip Technology I i ordiginal packing m mpleteness and accu rrmation is often pro vided only as estima lopants, metals, and rochip Technology I ranties provided by u	nd-of-Life Vehicles (ELV) Directive). hove EU Directives has been verified is absent from the list above, the cl ige and belief as of the date of this d reshold of regulatory concern for ar- sed by Microchip meet the UL94 V0 f y/pages/offerings/industries/chemica in which the specific product is ship- made from PVC plastic. Incorporated believes the information haterials is true and correct to the be- arracy of data in this form because it tected from disclosure as trade sec- ates of the average weight of these p I non-metal materials contained with Incorporated does not provide any v Microchip Technology Incorporated acknowledgement, and invoices. y duty to notify users of updates or	comply with EU Directive 2003 I via internal design controls, i hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sut est of its knowledge and belief has been compiled based on rets and some information m parts and the average weight (in silicon devices (silicon IC) warranty, express or implied, v d and its subsidiaries are cont changes to Material Content I	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho ostances restricted by RoHS in Microchip Technology Im i, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts.	S Recast Direct to the best of htration of the o obtain a test old the packing acorporated's a y Incorporate rided by raw m and raw materi se estimates d ion. The exclu- sale. These are rect or indirect	tive) and with Microchip Tec chemical subs report at slip on the ou cannot guara aterial suppliers. Ir o not include sive, limited pi provided in M , consequentia	EU chnology stance, if r devices in antee the ers. Supplier iformation is trace levels roduct licrochip's al or	3.03	Doped Silicon (mg) Total Copper Palladium	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 50°C for 1	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.2
tive 2002/53/EC (Er pliance with the ab hemical substance prorated's knowled is not below the thi ling compounds us //ul.com/global/eng protective "tubes" i ini "reels" may be n ochip Technology I original packing m pleteness and accu mation is often pro ochip Technology I anties provided by a settima opants, metals, and ochip Technology I anties provided by u	nd-of-Life Vehicles (ELV) Directive). hove EU Directives has been verified is absent from the list above, the cl ige and belief as of the date of this d reshold of regulatory concern for ar sed by Microchip meet the UL94 V0 f y/pages/offerings/Industries/chemicz in which the specific product is ship made from PVC plastic. Incorporated believes the informatic naterials is true and correct to the be tracy of data in this form because it breated from disclosure as trade sec ates of the average weight of these p I non-metal materials contained with Incorporated does not provide any w Microchip Technology Incorporate acknowledgement, and invoices. y duty to notify users of updates or users or third parties as a result of the	comply with EU Directive 2003 I via internal design controls, i hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sut est of its knowledge and belief has been compiled based on rets and some information m parts and the average weight (in silicon devices (silicon IC) warranty, express or implied, v d and its subsidiaries are cont changes to Material Content I	Total Mass 295/EC (RoHS Directive), EU Directive 2011/65/EU (RoH supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho ostances restricted by RoHS in Microchip Technology In i, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarat ained in Microchip's standard terms and conditions of s Declarations and shall not be liable for any damages, dir	S Recast Direct to the best of htration of the o obtain a test old the packing acorporated's a y Incorporate rided by raw m and raw materi se estimates d ion. The exclu- sale. These are rect or indirect	tive) and with Microchip Tec chemical subs report at slip on the ou cannot guara aterial suppliers. Ir o not include sive, limited pi provided in M , consequentia	EU chnology stance, if r devices in antee the ers. Supplier iformation is trace levels roduct licrochip's al or	3.03	Copper Palladium	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 % of Total Weight 98 2 100.00 % of Total Weight	0.2

MICROCHIP Semiconductor Device Type	PG 24 (Lord			nation Base A oper Alloy (C			•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Type	5. 10 24 (Leau		0/ Tatal					-		65
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1267.01	(mg) Total	Mold Compound	% ot Total Weight	68.46
Silica, vitreous	60676-86-0	Mold Compound	58,191	1076.958	581.910		Silica, vitreous	60676-86-0	85.00	1
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.193	77.604	41.932		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.193	77.604	41,932		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.677	31.042	16,773		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.205	3.801	2.054		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	27.830	515.060	278,301		Garbort Black	Total	100.00	4
Iron	7439-89-6	Lead Frame	0.685	12.669	6,846	539.12	(mg) Total	Lead Frame	% of Total Weight	
Silver	7440-22-4	Lead Frame	0.555	10.270	5,549	559.12	Copper	7440-50-8	95.54	29.13
Zinc	7440-22-4	Lead Frame	0.036	0.674	364		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.030	0.445	240		Silver	7439-89-6	2.35	
Silver	7440-22-4	Die Attach	0.104	1.917	1.036		Zinc	7440-22-4	0.13	
Epoxy resin	Trade Secret	Die Attach	0.032	0.596	322		Phosphorous	7723-14-0	0.08	
Gamma-butyrolactone	96-48-0	Die Attach	0.002	0.078	42		Filospilolous	Total	100.00	1
Silicon	7440-21-3	Chip (Die)	0.750	13.880	7,500	2.59	(mm) Total	Die Attach		
Gold	7440-21-3	Wire Bond	0.030	0.555	300	2.59	(mg) Total		% of Total Weight	0.14
							Silver	7440-22-4	74	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.490 100.000	27.576 1.850.730	14,900 1.000.000		Epoxy resin	Trade Secret 96-48-0	23	
		TOTALS:	100.000	1,050.750	1,000,000		Gamma-butyrolactone		3	<u> </u>
		g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	tive) and with	EU	13.88	Total (mg)	Chip (Die)	% of Total Weight	0.75
Compliance with the above EU Directives has been verified via inte	arnal design contro	s sunnlier declarations and /or analytical test data					Doped Silicon	7440-21-3	100	
	and design control	s, supplier declarations, and for analytical test data.					Doped Silicon			
If a chemical substance is absent from the list above, the chemical Incorporated's knowledge and belief as of the date of this docume any, is not below the threshold of regulatory concern for any regul	nt, there is no credi	ble reason to believe that the unavoidable impurity concer						Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flammal http://ul.com/global/eng/pages/offerings/industries/chemicals/plas		lastics. You can access the UL iQTM family of databases to	o obtain a test	report at		0.56	(mg) Total	Wire Bond	% of Total Weigh	0.03
The protective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic.	e made from polyvi	yl chloride (PVC) plastic. "Window envelopes" used to ho	old the packing	slip on the ou	iter box and		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in thi their original packing materials is true and correct to the best of its completeness and accuracy of data in this form because it has bee information is often protected from disclosure as trade secrets and provided only as estimates of the average weight of these parts an of dopants, metals, and non-metal materials contained within silic	knowledge and be compiled based of some information d the average weig	lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	y Incorporated vided by raw m and raw materi	l cannot guara aterial supplie al suppliers. Ir	intee the ers. Supplier information is			Total	100.00	-
Microchip Technology Incorporated does not provide any warranty warranties provided by Microchip Technology Incorporated and its quotations, sales order acknowledgement, and invoices.						27.58	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.49
Microchip disclaims any duty to notify users of updates or change otherwise, suffered by users or third parties as a result of the user of this Certificate of Compliance for semiconductor products.							Tin	7440-31-5	100.00	
								Total	100.00	
						1.850.730				100.000

AICROCHIP Semiconductor Device Ty		(02/08)		nation Base A opper Alloy (C			Package Hom	ogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Ty	Je. 201 Dil .000	"Contained In"	% I otal							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	3226.93	(mg) Total	Mold Compound	% ot Total Weight	79.35
Fused Silica	60676-86-0	Mold Compound	57.132	2323.387	571,320		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.729	354.962	87,285		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin Phenol Resin	Trade Secret	Mold Compound	5.555	225.885 225.885	55,545 55,545		Epoxy Resin	Trade Secret	7.00	
SiO2	Trade Secret 14808-60-7	Mold Compound Mold Compound	5.555 1.984	80.673	19,838		Phenol Resin SiO2	Trade Secret 14808-60-7	7.00 2.50	
Carbon Black	1333-86-4	Mold Compound	0.397	16.135	3,968		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	9.984	406.006	99,837			Total	100.00	
Iron	7439-89-6	Lead Frame	0.246	9.987	2,456	424.97	(mg) Total	Lead Frame	% of Total Weight	10.45
Silver	7440-22-4	Lead Frame	0.199	8.096	1,991		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.531	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame Tape	0.009	0.351	86		Silver	7440-22-4	1.91	
Polyimide Poly - ethylene – terephthalate	25038-81-7 25038-59-9	Lead Frame Tape Lead Frame Tape	0.215	8.743 7.727	2,150 1.900		Zinc Phosphorous	7440-66-6 7723-14-0	0.13	
NBR	9003-18-3	Lead Frame Tape	0.190	1.423	350		r nosphorous	7723-14-0 Total	0.08	
Bismaleimide	79922-55-7	Lead Frame Tape	0.030	1.423	300	20.33	(mg) Total	Lead Frame Tape	% of Total Weight	0.5
Phenol resin	153-20-5 / 9016-8	Lead Frame Tape	0.030	1.220	300	20.00	Polyimide	25038-81-7	43.00	0.0
Silver	7440-22-4	Die Attach	0.550	22.375	5,502	P	oly - ethylene – terephthala		38.00	
Epoxy Resin	9003-36-5	Die Attach	0.110	4.474	1,100		NBR	9003-18-3	7.00	
Diluent	3101-60-8	Die Attach	0.055	2.236	550		Bismaleimide	79922-55-7	6.00	
Phenolic hardener	Trade secret	Die Attach	0.022	0.894	220		Phenol resin	28453-20-5 / 9016-83-5	6.00	
Amine type hardener	827-43-0	Die Attach	0.011	0.448	110			Total	100.00	
Dicyandiamide	461-58-5	Die Attach	0.002	0.073	18	30.50	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	305.003	75,000		Silver	7440-22-4	73.36	
Copper Palladium	7440-50-8 7440-05-3	Wire Bond palladium coated copper (CuPd) Wire Bond palladium coated copper (CuPd)	0.197	7.991 0.142	1,965 35		Epoxy Resin	9003-36-5 3101-60-8	14.67 7.33	
Tin	7440-05-3	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	50.834	12,500		Diluent Phenolic hardener	Trade secret	2.93	
	1440 01 0	TOTALS:	100.000				T HEHOIC HUIGENEI			
			100.000	4,066.700	1,000,000		Amine type hardener	827-43-0	1.47	
	4.0667	g Total Mass	100.000	4,066.700	1,000,000		Amine type hardener Dicyandiamide	827-43-0 461-58-5		
semiconductor device and its homogenous materials comp ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		g Total Mass							1.47	
	ly with EU Directive 2	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS				305.00		461-58-5	1.47 0.24	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ly with EU Directive 2 nternal design contro cal substance is NOT nent, there is no credi	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	S Recast Direct to the best of	ctive) and with f Microchip Tee	n EU chnology	305.00	Dicyandiamide	461-58-5 Total	1.47 0.24 100.00	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic rporated's knowledge and belief as of the date of this docum	ly with EU Directive 2 Internal design contro cal substance is NOT ment, there is no credi ulatory scheme work nability standard for p	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent I-wide.	S Recast Direct to the best of atration of the	ctive) and with Microchip Tee chemical subs	n EU chnology	305.00	Dicyandiamide	461-58-5 Total Chip (Die)	1.47 0.24 100.00 % of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic irporated's knowledge and belief as of the date of this docun is not below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 flamm	ly with EU Directive 2 Internal design contro cal substance is NOT ent, there is no credi ulatory scheme work ability standard for p astics/	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent straide. lastics. You can access the UL IQTM family of databases to	S Recast Direct to the best of atration of the pobtain a test	ctive) and with f Microchip Tea chemical subs t report at	n EU chnology stance, if	<u>305.00</u> 8.13	Dicyandiamide	461-58-5 Total Chip (Die) 7440-21-3	1.47 0.24 100.00 % of Total Weight 100	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic rporated's knowledge and belief as of the date of this docun is not below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 flamm ://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a	ly with EU Directive 2 htternal design contro ial substance is NOT hent, there is no credi ulatory scheme work ability standard for p astics/ are made from polyvi his form concerning its knowledge and be een compiled based ind some information and the average weig	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent -wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	S Recast Direct to the best of tration of the o obtain a test ld the packing corporated's y Incorporate ided by raw m	ctive) and with f Microchip Ter chemical subs report at g slip on the or semiconducto d cannot guara naterial supplie	n EU chnology stance, if uter box and or devices in antee the ers. Supplier information is		Dicyandiamide Total (mg) Doped Silicon	461-58-5 Total Chip (Die) 7440-21-3 Total Wire Bond palladium coated	1.47 0.24 100.00 % of Total Weight 100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ppliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic irporated's knowledge and belief as of the date of this docum. Is not below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in to roing and packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets a rided only as estimates of the average weight of these parts.	ly with EU Directive 2 nternal design contro al substance is NOT nent, there is no credi ulatory scheme work ability standard for p astics/ are made from polyvi his form concerning its knowledge and be een compiled based nd some information and the average weig icon devices (silicon nty, express or implie	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology In the of anticipated significant toxic metals components. The Ic of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarati	S Recast Direct to the best of tration of the o obtain a test of the packing corporated's y Incorporated ided by raw m and raw mater se estimates o toon. The exclu	ctive) and with f Microchip Ter chemical subs report at g slip on the or semiconducto d cannot guard d cannot guard aterial suppliers. It do not include usive, limited p	n EU chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels oroduct		Dicyandiamide Total (mg) Doped Silicon (mg) Total	461-58-5 Total Chip (Die) 7440-21-3 Total Wire Bond palladium coated conper (CuPd) 7440-50-8 7440-50-3	1.47 0.24 100.00 % of Total Weight 100 100.00 % of Total Weight 98	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic irporated's knowledge and belief as of the date of this docur is not below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 flamm ://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in tr r original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has b rmation is often protected from disclosure as trade secrets a vided only as estimates of the average weight of these parts opants, metals, and non-metal materials contained within sill rochip Technology Incorporated does not provide any warrar anties provided by Microchip Technology Incorporated and	ly with EU Directive 2 Internal design contro al substance is NOT vent, there is no credi ulatory scheme work ability standard for p astics/ are made from polyvi his form concerning its knowledge and be een compiled based nd some information and the average weig iccon devices (silicon ty, express or implie its subsidiaries are c ges to Material Conte	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent- i-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declaration ontained in Microchip's standard terms and conditions of s and toclarations and shall not be liable for any damages, dir	S Recast Direct to the best of tration of the o obtain a test d the packing corporated's y Incorporate ided by raw m ind raw mater se estimates o ion. The exclu- iale. These are ect or indirect	ctive) and with f Microchip Tec chemical subs report at g slip on the or d cannot guard naterial supplies. I al supplies do not include sive, limited p e provided in N t, consequenti	EU chnology stance, if uter box and or devices in antee the ers. Supplier information is trace levels voduct dicrochip's al or		Dicyandiamide Total (mg) Doped Silicon (mg) Total Copper	461-58-5 Total Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8	1.47 0.24 100.00 % of Total Weight 100 100.00 % of Total Weight 98	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in themical substance is absent from the list above, the chemic rporated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any reg ting compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in to original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets a ided only as estimates of the average weight of these parts. opants, metals, and non-metal materials contained within sil ochip Technology Incorporated does not provide any warrar anties provided by Microchip Technology Incorporated and ations, sales ord acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or change rwise, suffered by users or third parties as a result of the use	ly with EU Directive 2 Internal design contro al substance is NOT vent, there is no credi ulatory scheme work ability standard for p astics/ are made from polyvi his form concerning its knowledge and be een compiled based nd some information and the average weig iccon devices (silicon ty, express or implie its subsidiaries are c ges to Material Conte	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent- i-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declaration ontained in Microchip's standard terms and conditions of s and toclarations and shall not be liable for any damages, dir	S Recast Direct to the best of tration of the o obtain a test d the packing corporated's y Incorporate ided by raw m ind raw mater se estimates o ion. The exclu- iale. These are ect or indirect	ctive) and with f Microchip Tec chemical subs report at g slip on the or d cannot guard naterial supplies. I al supplies do not include sive, limited p e provided in N t, consequenti	EU chnology stance, if uter box and or devices in antee the ers. Supplier information is trace levels voduct dicrochip's al or		Dicyandiamide Total (mg) Doped Silicon (mg) Total Copper	461-58-5 Total Chip (Die) 7440-21-3 Total Wire Bond palladium coated conper (CuPd) 7440-50-8 7440-50-3	1.47 0.24 100.00 % of Total Weight 100 100.00 % of Total Weight 98	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Dilance with the above EU Directives has been verified via in termical substance is absent from the list above, the chemic orated's knowledge and belief as of the date of this docum s not below the threshold of regulatory concern for any reg ng compounds used by Microchip meet the UL94 V0 flamm ful.com/global/eng/pages/offerings/industries/chemicals/pla rotective "tubes" in which the specific product is shipped a n "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in to roiginal packing materials is true and correct to the best of leteness and accuracy of data in this form because it has b nation is often protected from disclosure as trade secrets a ded only as estimates of the average weight of these parts. pants, metals, and non-metal materials contained within sil chip Technology Incorporated does not provide any warran nites provided by Microchip Technology Incorporated and tions, sales order acknowledgement, and invoices. chip disclaims any duty to notify users of updates or chang wise, suffered by users or third parties as a result of the us	ly with EU Directive 2 Internal design contro al substance is NOT vent, there is no credi ulatory scheme work ability standard for p astics/ are made from polyvi his form concerning its knowledge and be een compiled based nd some information and the average weig iccon devices (silicon ty, express or implie its subsidiaries are c ges to Material Conte	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent- i-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declaration ontained in Microchip's standard terms and conditions of s and toclarations and shall not be liable for any damages, dir	S Recast Direct to the best of tration of the o obtain a test d the packing corporated's y Incorporate ided by raw m ind raw mater se estimates o ion. The exclu- iale. These are ect or indirect	ctive) and with f Microchip Tec chemical subs report at g slip on the or d cannot guard naterial supplies. I al supplies do not include sive, limited p e provided in N t, consequenti	EU chnology stance, if uter box and or devices in antee the ers. Supplier information is trace levels voduct dicrochip's al or	8.13	Dicyandiamide Total (mg) Doped Silicon (mg) Total Copper Palladium	461-58-5 Total Chip (Die) 7440-21-3 Total Wire Bond palladium coated conner (CuPd) 7440-50-8 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin /	1.47 0.24 100.00 % of Total Weight 100 100.00 % of Total Weight 98 2 2 100.00	0.2

	DUE 22 (1-2)			ination Base opper Alloy (•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Typ	E. FIL JZ (Lea	"Contained In"	% I otal							
Basic Substance	CAS Number	Sub-Component	Weight	malaart		4478.48	(mg) Total	Mold Compound	% ot Total Weight	85.67
		•	Ŭ	mg/part	ppm				-	
Silica, vitreous	60676-86-0 Trade Secret	Mold Compound Mold Compound	72.820	3806.712	728,195 52,473		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin			5.247	274.307	52,473		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	5.247	274.307			Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	2.099	109.723	20,989		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.257	13.435	2,570		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	12.783	668.240	127,829			Total	100.00	
Iron	7439-89-6	Lead Frame	0.314	16.437	3,144	699.45	(mg) Total	Lead Frame	% of Total Weight	13.38
Silver	7440-22-4	Lead Frame	0.255	13.325	2,549		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.017	0.874	167		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.011	0.577	110		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.128	6.691	1,280		Zinc	7440-66-6	0.13	
Epoxy Resin	Trade Secret	Die Attach	0.027	1.422	272		Phosphorous	7723-14-0	0.08	
Copper (Cu)	7440-50-8	Die Attach	0.005	0.251	48			Total	100.00	
Doped Silicon	7440-21-3	Chip (Die)	0.220	11.501	2,200	8.36	(mg) Total	Die Attach	% of Total Weight	0.16
Doped Gold	7440-57-5	Wire Bond	0.030	1.568	300		Silver (Ag)	7440-22-4	80.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.540	28.229	5,400		Epoxy Resin	Trade Secret	17.00	
		TOTALS:	100.000	5,227.600	1,000,000		Copper (Cu)	7440-50-8	3.00	
	5 2276	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comply			Deserve Dise							
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2	002/95/EC (ROHS Directive), EU Directive 2011/65/EU (ROHS	5 Recast Dire	ective) and wit	in EU	11.50	(mg) Total	Chip (Die)	% of Total Weight	0.22
Compliance with the above EU Directives has been verified via inte	rnal design control	s, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemical Incorporated's knowledge and belief as of the date of this documer								Total	100.00	
any, is not below the threshold of regulatory concern for any regulatory				chemical sur	JStance, ii					
Molding compounds used by Microchip meet the UL94 V0 flammat http://ul.com/global/eng/pages/offerings/industries/chemicals/plast		astics. You can access the UL iQTM family of databases to	obtain a tes	t report at		1.57	(mg) Total	Wire Bond	% of Total Weight	0.03
The protective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic.	made from polyvir	yl chloride (PVC) plastic. "Window envelopes" used to ho	ld the packin	g slip on the c	outer box and		Doped Gold	7440-57-5	100.00	
							P.	Total	100.00	u
Microchip Technology Incorporated believes the information in this								- Otdi	100.00	
their original packing materials is true and correct to the best of its	knowledge and be	ief, as of the date listed in this form. Microchip Technology	y Incorporate	ed cannot gua	rantee the					
completeness and accuracy of data in this form because it has bee	n compiled based o	on the ranges provided in Material Safety Data Sheets prov	ided by raw i	naterial suppl	iers. Supplier					
information is often protected from disclosure as trade secrets and	some information	may not have been provided by subcontract assemblers a	nd raw mate	rial suppliers.	Information					
is provided only as estimates of the average weight of these parts										
levels of dopants, metals, and non-metal materials contained within			icoc commun							
levels of dopants, metals, and non-metal materials contained within	i silicoli devices (s	nicon ic/ in the misned parts.								
Mine all's Table all such as a faith data and such as the		I with a second to the lefermentian monoided in this designed	T I		and the state			Plating on external		
Microchip Technology Incorporated does not provide any warranty								leads (pins) - Matte Tin /		
warranties provided by Microchip Technology Incorporated and its	subsidiaries are co	intained in Microchip's standard terms and conditions of s	ale. These ar	e provided in	Microchip's	28.23	(mg) Total	annealed at 150°C for 1	% of Total Weight	0.54
quotations, sales order acknowledgement, and invoices.								hour		
Microchip disclaims any duty to notify users of updates or changes	to Material Conter	t Declarations and shall not be liable for any damages dire	ect or indired	t consequent	tial or					
otherwise, suffered by users or third parties as a result of the users							Tin	7440-31-5	100.00	
	s renalice on the in	iormation in material content Declarations (MCD) of Indep	endent triffa	party test rep	ona (363) or		101	/440-31-3	100.00	
of this Certificate of Compliance for semiconductor products.										
								Total	100.00	
						5,227.60	0			100.000

Semiconductor Device	Type: P and PL 4	0 PDIP .500in (S2)		nation Base A pper Alloy (C	-		Package Homo	ogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			5157.75	(mg) Total	Mold Compound	% ot Total Weight	79.35
Basic Substance Fused Silica	CAS Number 60676-86-0	Sub-Component Mold Compound	Weight 57.132	mg/part 3713.580	ppm 571.320			60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound Mold Compound	8.729	567.353	571,320 87,285		Fused Silica Metal Hydro Oxide	Trade Secret	72.00	
Epoxy Resin	Trade Secret	Mold Compound	5.555	361.043	55.545		Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.555	361.043	55,545		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.984	128.944	19,838		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.397	25.789	3,968		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8 7439-89-6	Lead Frame	9.984 0.246	648.938 15.962	99,837	070.05	() = ()	Total	100.00	10.15
Iron Silver	7439-89-6	Lead Frame Lead Frame	0.246	15.962	2,456 1,991	679.25	(mg) Total	Lead Frame 7440-50-8	% of Total Weight 95.54	10.45
Zinc	7440-22-4	Lead Frame	0.013	0.849	131		Copper Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.560	86		Silver	7440-22-4	1.91	
Polyimide	25038-81-7	Lead Frame Tape	0.215	13.975	2,150		Zinc	7440-66-6	0.13	
Poly - ethylene – terephthalate	25038-59-9	Lead Frame Tape	0.190	12.350	1,900		Phosphorous	7723-14-0	0.08	
NBR	9003-18-3	Lead Frame Tape	0.035	2.275	350			Total		
Bismaleimide	79922-55-7	Lead Frame Tape	0.030	1.950	300	32.50	(mg) Total	Lead Frame Tape	% of Total Weight	0.5
Phenol resin	453-20-5 / 9016-8	Lead Frame Tape	0.030	1.950	300	_	Polyimide	25038-81-7	43.00	
Silver	7440-22-4 9003-36-5	Die Attach	0.550	35.763 7.152	5,502 1,100	F	Poly - ethylene - terephthala		38.00	
Epoxy Resin Diluent	9003-36-5 3101-60-8	Die Attach Die Attach	0.110	3.573	550		NBR Bismaleimide	9003-18-3 79922-55-7	7.00	
Phenolic hardener	Trade secret	Die Attach	0.022	1.428	220		Phenol resin	28453-20-5 / 9016-83-5	6.00	
Amine type hardener	827-43-0	Die Attach	0.011	0.717	110		T Henor realit	Z0400 Z0 07 0010 00 0	100.00	
Dicyandiamide	461-58-5	Die Attach	0.002	0.117	18	48.75	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	487.500	75,000		Silver	7440-22-4	73.36	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	12.773	1,965		Epoxy Resin	9003-36-5	14.67	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.228	35		Diluent	3101-60-8	7.33	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	81.250	12,500		Phenolic hardener	Trade secret	2.93	
		TOTALS:	100.000	6,500.000	1,000,000		Amine type hardener	827-43-0	1.47	
is semiconductor device and its homogenous materials co ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	IS Recast Direc	tive) and with			Dicyandiamide	461-58-5	0.24	
	5				EU			Total	100.00	
orporated's knowledge and belief as of the date of this do		Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concertioner in the semiconductor in the impurity concertion.			:hnology	487.50	Total (mg) Doped Silicon	Total Chip (Die) 7440-21-3	100.00 % of Total Weight 100	7.5
corporated's knowledge and belief as of the date of this do y, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 fla	ocument, there is no credi y regulatory scheme world	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer I-wide.	ntration of the	chemical subs	:hnology	487.50		Chip (Die)	% of Total Weight	7.5
y, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 fla p://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp	ocument, there is no credi y regulatory scheme work ammability standard for p s/plastics/	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL iQTM family of databases t	ntration of the	chemical subs	chnology stance, if	487.50		Chip (Die) 7440-21-3 Total Wire Bond palladium coated	% of Total Weight	7.5
y, is not below the threshold of regulatory concern for any	ocument, there is no credil y regulatory scheme work ammability standard for pi (s/plastics/ ped are made from polyvir n in this form concerning e ts of its knowledge and be as been compiled based of ets and some information arts and the average weigi	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	ntration of the to obtain a test old the packing ncorporated's s gy Incorporated vided by raw m and raw materi	chemical subs report at slip on the or semiconductoo d cannot guara aterial suppliers. In al suppliers. In	chnology stance, if iter box and r devices in intee the ers. Supplier iformation is		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00	
y, is not below the threshold of regulatory concern for any Iding compounds used by Microchip meet the UL94 V0 fla p://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information is original packing materials is true and correct to the bes mpleteness and accuracy of data in this form because it h ormation is often protected from disclosure as trade secre voided only as estimates of the average weight of these pa dopants, metals, and non-metal materials contained within crochip Technology Incorporated does not provide any wa rranties provided by Microchip Technology Incorporated of	ocument, there is no credil y regulatory scheme work ammability standard for pi (s/plastics/ ped are made from polyvir n in this form concerning si st of its knowledge and be as been compiled based of ets and some information arts and the average weigi n silicon devices (silicon l arranty, express or implied	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The (C) in the finished parts.	ntration of the to obtain a test old the packing ncorporated's i gy Incorporated vided by raw m and raw materi ase estimates d tion. The exclu	chemical subs report at slip on the or semiconducto d cannot guara aterial supplie al suppliers. In o not include sive, limited p	chnology stance, if Iter box and r devices in antee the ers. Supplier iformation is trace levels roduct		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-50-3	% of Total Weight 100 100.00 % of Total Weight 98 2	
y, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 fla p://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information eir original packing materials is true and correct to the bes mpleteness and accuracy of data in this form because it h ormation is often protected from disclosure as trade secre ovided only as estimates of the average weight of these pa	ocument, there is no credil y regulatory scheme work ammability standard for pi is/plastics/ ped are made from polyvir n in this form concerning si st of its knowledge and be as been compiled based of ets and some information arts and the average weigi n silicon devices (silicon l arranty, express or implier and its subsidiaries are con hanges to Material Conter e users' reliance on the in	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of a the Declarations and shall not be liable for any damages, dii	ntration of the to obtain a test old the packing ncorporated's : gy Incorporated vided by raw m and raw mate ase estimates d tion. The exclu sale. These are irect or indirect	chemical subs report at semiconducto d cannot guard aterial supplier al supplieral suppliers o not include sive, limited p provided in N , consequenti	chnology stance, if iter box and r devices in intee the ers. Supplier iformation is trace levels roduct licrochip's al or		(mg) Total Copper	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98 2	
y, is not below the threshold of regulatory concern for any liding compounds used by Microchip meet the UL94 V0 fla p://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information is original packing materials is true and correct to the bes mpleteness and accuracy of data in this form because it h ormation is often protected from disclosure as trade secre voided only as estimates of the average weight of these pa dopants, metals, and non-metal materials contained within crochip Technology Incorporated does not provide any we rranties provided by Microchip Technology Incorporated totations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or clerwise, suffered by users or third parties as a result of the	ocument, there is no credil y regulatory scheme work ammability standard for pi is/plastics/ ped are made from polyvir n in this form concerning si st of its knowledge and be as been compiled based of ets and some information arts and the average weigi n silicon devices (silicon l arranty, express or implier and its subsidiaries are con hanges to Material Conter e users' reliance on the in	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of a the Declarations and shall not be liable for any damages, dii	ntration of the to obtain a test old the packing ncorporated's : gy Incorporated vided by raw m and raw mate ase estimates d tion. The exclu sale. These are irect or indirect	chemical subs report at semiconducto d cannot guard aterial supplier al suppliers o not include sive, limited p provided in N , consequenti	chnology stance, if iter box and r devices in intee the ers. Supplier iformation is trace levels roduct licrochip's al or		(mg) Total Copper	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-50-3	% of Total Weight 100 100.00 % of Total Weight 98 2	
, is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fla ://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bes npleteness and accuracy of data in this form because it h irmation is often protected from disclosure as trade secre vided only as estimates of the average weight of these pa lopants, metals, and non-metal materials contained within rochip Technology Incorporated does not provide any we ranties provided by Microchip Technology Incorporated attations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or ci	ocument, there is no credil y regulatory scheme work ammability standard for pi is/plastics/ ped are made from polyvir n in this form concerning si st of its knowledge and be as been compiled based of ets and some information arts and the average weigi n silicon devices (silicon l arranty, express or implier and its subsidiaries are con hanges to Material Conter e users' reliance on the in	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of a the Declarations and shall not be liable for any damages, dii	ntration of the to obtain a test old the packing ncorporated's : gy Incorporated vided by raw m and raw mate ase estimates d tion. The exclu sale. These are irect or indirect	chemical subs report at semiconducto d cannot guard aterial supplier al suppliers o not include sive, limited p provided in N , consequenti	chnology stance, if iter box and r devices in intee the ers. Supplier iformation is trace levels roduct licrochip's al or	13.00	Copper Silicon (mg) Total Copper Palladium	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-55-3 Total Plating on external leads (pins) - Matte Tin / annealed at 50°C for 1	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.2

6,500.000

	Type: SP 28 (Lead) S	SPDIP .300" (M3 / MD)		nation Base A pper Alloy (C	-		Package Homo	ogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1656.43	(mg) Total	Mold Compound	% ot Total Weight	79.35
Fused Silica	60676-86-0	Mold Compound	57.132	1192.631	571,320		Fused Silica	60676-86-0	72.00	7
Metal Hydro Oxide	Trade Secret	Mold Compound	8.729	182.207	87,285		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.555	115.950	55,545		Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.555	115.950	55,545		Phenol Resin	Trade Secret	7.00	
SiO2 Carbon Black	14808-60-7 1333-86-4	Mold Compound Mold Compound	1.984 0.397	41.411 8.282	19,838 3,968		SiO2 Carbon Black	14808-60-7 1333-86-4	2.50 0.50	
Carbon Black	7440-50-8	Lead Frame Tape	9.984	208.409	3,966 99.837		Carbon Black	1333-86-4 Total		1
Iron	7439-89-6	Lead Frame Tape	0.246	5.126	2,456	218.14	(mg) Total	Lead Frame	% of Total Weight	
Silver	7440-22-4	Lead Frame Tape	0.199	4.156	1,991	210114	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame Tape	0.013	0.273	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame Tape	0.009	0.180	86		Silver	7440-22-4	1.91	1
Polyimide	25038-81-7	Lead Frame Tape	0.215	4.488	2,150		Zinc	7440-66-6	0.13	
Poly - ethylene – terephthalate	25038-59-9	Lead Frame Tape	0.190	3.966	1,900		Phosphorous	7723-14-0	0.08	
NBR	9003-18-3	Lead Frame Tape	0.035	0.731	350			Total		
Bismaleimide	79922-55-7	Lead Frame Tape	0.030	0.626	300	10.44	(mg) Total	Lead Frame Tape	% of Total Weight	0.5
Phenol resin	453-20-5 / 9016-8	Lead Frame Tape	0.030	0.626	300		Polyimide	25038-81-7	43.00	
Silver	7440-22-4	Die Attach	0.550	11.485	5,502	1	Poly - ethylene - terephthala	25038-59-9	38.00	
Epoxy Resin	9003-36-5	Die Attach	0.110	2.297	1,100		NBR	9003-18-3	7.00	
Diluent Phenolic hardener	3101-60-8 Trade secret	Die Attach Die Attach	0.055	1.148 0.459	550 220		Bismaleimide Phenol resin	79922-55-7 28453-20-5 / 9016-83-5	6.00 6.00	
Amine type hardener	827-43-0	Die Attach	0.011	0.230	110		Flichoritesin	Z0453-20-37 9010-85-5 Total		<u>.</u>
Dicyandiamide	461-58-5	Die Attach	0.002	0.038	18	15.66	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	156.563	75,000	15.00	Silver	7440-22-4	73.36	0.75
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	4.102	1.965		Epoxy Resin	9003-36-5	14.67	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.073	35		Diluent	3101-60-8	7.33	
Tin		ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	26.094	12,500		Phenolic hardener	Trade secret	2.93	
		TOTALS:	100.000	2,087.500	1,000,000		Amine type hardener	827-43-0	1.47	1
	2.0875 a	Total Mass					Dicyandiamide	461-58-5	0.24	
semiconductor device and its homogenous materials co ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified v			IS Necast Direc		20	156.56	Total (mg)	Chip (Die)	% of Total Weight	7.5
chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any	emical substance is NOT an cument, there is no credible	intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity conce					Doped Silicon	7440-21-3	100	
ding compounds used by Microchip meet the UL94 V0 fla ://ul.com/global/eng/pages/offerings/industries/chemicals		tics. You can access the UL iQTM family of databases	to obtain a test	report at				Total	100.00	4
e protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic.	ed are made from polyvinyl	chloride (PVC) plastic. "Window envelopes" used to h	old the packing	slip on the ou	uter box and	4.18	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2
rochip Technology Incorporated believes the information r original packing materials is true and correct to the best pleteness and accuracy of data in this form because it ha rmation is often protected from disclosure as trade secre vided only as estimates of the average weight of these pa lopants, metals, and non-metal materials contained withir	t of its knowledge and belie as been compiled based on ets and some information m rts and the average weight	i, as of the date listed in this form. Microchip Technolo the ranges provided in Material Safety Data Sheets pro ay not have been provided by subcontract assemblers of anticipated significant toxic metals components. Th	gy Incorporated vided by raw m and raw materi	l cannot guara aterial supplie al suppliers. Ir	antee the ers. Supplier nformation is		Copper	7440-50-8	98	
crochip Technology Incorporated does not provide any wa rranties provided by Microchip Technology Incorporated a ptations, sales order acknowledgement, and invoices.							Palladium	7440-05-3	2	
rochip disclaims any duty to notify users of updates or ch erwise, suffered by users or third parties as a result of the his Certificate of Compliance for semiconductor products	e users' reliance on the info							Total	100.00	
						26.09	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.25

100.000

100.00

100.00

7440-31-5

Total

Tin

2,087.500

	······	C (L4)		pper Alloy (C	u)		8.1 Electronics (e.g. pc boards, displa	/s)	and/or Pkg. Labeling e3
	CAS Number	"Contained In" Sub-Component	% lotal Weight	mg/part	ppm	818.39	(mg) Total	Mold Compound	% ot Total Weight	71.63
Silica, vitreous	60676-86-0	Mold Compound	60,886	695,635	608,855		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.387	50.127	43,873		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.387	50.127	43.873		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.755	20.051	17,549		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.215	2.455	2,149		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	25.115	286.945	251.148			Total	100.00	1
Silver	7440-22-4	Lead Frame	0.488	5.578	4.883	292.83	(mg) Total	Lead Frame	% of Total Weight	25.63
Zirconium	7440-67-7	Lead Frame	0.026	0.293	256	232.00	Copper	7440-50-8	97.99	20.00
Manganese	7439-96-5	Lead Frame	0.020	0.015	13		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.163	1.860	1.628		Zirconium	7440-22-4	0.10	
Epoxy resin	Trade Secret	Die Attach	0.051	0.578	506		Manganese	7439-96-5	0.01	
Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.075	66		Manganese	Total	100.00	1
Silicon	7440-21-3	Chip (Die)	1.210	13.825	12,100	2.51		Die Attach	% of Total Weight	0.22
Gold	7440-21-3	- (-)	0.070	0.800	700	2.51	(mg) Total			0.22
		Wire Bond					Silver	7440-22-4	74	
Tin	7440-31-5 Platir	g on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.240 100.000	14.167	12,400 1.000.000		Epoxy resin	Trade Secret	23	
		TOTALS:	100.000	1,142.530	1,000,000		Gamma-butyrolactone	96-48-0 Total	3 100.00	
emiconductor device and its homogenous materials comply with ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	1.1425 g 1 th EU Directive 2002/9		IS Recast Direc	tive) and with	EU	13.82	Total (mg)	Chip (Die)	% of Total Weight	1.21
bliance with the above EU Directives has been verified via internal nemical substance is absent from the list above, the chemical sub porated's knowledge and belief as of the date of this document, th	bstance is NOT an in there is no credible re	tentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity conce					Doped Silicon	7440-21-3 Total	100 100.00	
is not below the threshold of regulatory concern for any regulatory ing compounds used by Microchip meet the UL94 V0 flammability //ul.com/global/eng/pages/offerings/industries/chemicals/plastics/	y standard for plastic		o obtain a test	report at		0.80	(mg) Total	Wire Bond	% of Total Weight	0.07
protective "tubes" in which the specific product is shipped are ma in "reels" may be made from PVC plastic.	ade from polyvinyl c	nloride (PVC) plastic. "Window envelopes" used to he	old the packing	slip on the ou	iter box and		Doped Gold	7440-57-5	100	
schip Technology Incorporated believes the information in this for original packing materials is true and correct to the best of its kno pleteness and accuracy of data in this form because it has been co mation is often protected from disclosure as trade secrets and so ided only as estimates of the average weight of these parts and th	nowledge and belief, a compiled based on th ome information may he average weight of	is of the date listed in this form. Microchip Technolog e ranges provided in Material Safety Data Sheets pro- not have been provided by subcontract assemblers a anticipated significant toxic metals components. The	y Incorporated vided by raw m and raw materi	l cannot guara aterial supplie al suppliers. In	antee the ers. Supplier oformation is			Total	100.00	-
pants, metals, and non-metal materials contained within silicon de				sive limited or	roduct			Plating on external		
					licrochip's	14.17	(mg) Total	leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.24
pants, metals, and non-metal materials contained within silicon de ochip Technology Incorporated does not provide any warranty, ex anties provided by Microchip Technology Incorporated and its sub	ubsidiaries are contai o Material Content De	ned in Microchip's standard terms and conditions of	sale. These are rect or indirect	provided in M , consequentia	al or	14.17	(mg) Total Tin	annealed at 150°C for 1	% of Total Weight	1.24

ЛІСКОСНІР				nation Base A pper Alloy (C				geneous Materials: g. pc boards, displays)	JEDEC 97 Produ Marking and/or Pkg. Labeling e3
Semiconductor Device Type	e: NHE 32 (Lead	d) PLCC (P3)								
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	677.40	(mg) Total	Mold Compound	% ot Total Weight	60
Silica, vitreous	60676-86-0	Mold Compound	51.000	575.790	510,000		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	41.491	36.750		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	41.491	36,750		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.470	16.596	14,700		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.180	2.032	1,800		Carbon Black	1333-86-4	0.30	
Copper (Cu)	7440-50-8	Lead Frame	29.760	335.990	297,600			Total	100.00	•
Nickle (Ni)	7440-02-0	Lead Frame	1.280	14.451	12,800	361.28	(mg) Total	Lead Frame	% of Total Weight	32
Silicon (Si)	7440-21-3	Lead Frame	0.320	3.613	3,200		Copper (Cu)	7440-50-8	93.00	
Magnesium (Mg)	7439-95-4	Lead Frame	0.064	0.723	640		Nickle (Ni)	7440-02-0	4.00	
Silver (Ag)	7440-22-4	Lead Frame	0.576	6.503	5,760		Silicon (Si)	7440-21-3	1.00	
Silver (Ag)	7440-22-4	Die Attach	0.064	0.723	640		Magnesium (Mg)	7439-95-4	0.20	
Epoxy Resin	Trade Secret	Die Attach	0.014	0.154	136		Silver (Ag)	7440-22-4	1.80	
Copper (Cu)	7440-50-8	Die Attach	0.002	0.027	24			Total	100.00	2
Silicon	7440-21-3	Chip (Die)	4.820	54.418	48.200	0.90	(mg) Total	Die Attach	% of Total Weight	0.08
Gold	7440-57-5	Wire Bond	0.100	1,129	1.000		Silver (Ag)	7440-22-4	80	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	33.870	30.000		Epoxy Resin	Trade Secret	17	
	110010	TOTALS:	100.000	1,129.000	1.000.000		Copper (Cu)	7440-50-8	3	
	1 1 2 0 0	g Total Mass		,	,,			Total	100.00	J
			J (RoHS Recas	st Directive) an	d with EU	54.42	Total (mg)	Chip (Dia)	% of Total Weight	4 82
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via inte	with EU Directive 200 rnal design controls,	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data.				54.42	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	4.82
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via inte themical substance is absent from the list above, the chemical mology Incorporated's knowledge and belief as of the date of th nical substance, if any, is not below the threshold of regulatory ling compounds used by Microchip meet the UL94 V0 flammab	with EU Directive 200 rnal design controls, substance is NOT ar his document, there r concern for any reg ility standard for plas	295/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor devic is no credible reason to believe that the unavoidat ulatory scheme world-wide.	e and, to the b le impurity co	best of Microch	nip the	54.42	,	7440-21-3	100	0.1
s semiconductor device and its homogenous materials comply active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via inter chemical substance is absent from the list above, the chemical shology Incorporated's knowledge and belief as of the date of the mical substance, if any, is not below the threshold of regulatory ding compounds used by Microchip meet the UL94 V0 flammab s://ul.com/global/eng/pages/offerings/industries/chemicals/plasti e protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.	with EU Directive 200 rnal design controls, substance is NOT ar his document, there i r concern for any reg ility standard for plas ics/	295/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor devic is no credible reason to believe that the unavoidat ulatory scheme world-wide. stics. You can access the UL iQTM family of datab	e and, to the b le impurity co ases to obtain	best of Microch Incentration of a test report a	nip 'the at		Doped Silicon	7440-21-3 Total	100 100.00 % of Total Weight 100	
active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via inter chemical substance is absent from the list above, the chemical shoology Incorporated's knowledge and belief as of the date of th mical substance, if any, is not below the threshold of regulatory ding compounds used by Microchip meet the UL94 V0 flammab s://ul.com/global/eng/pages/offerings/industries/chemicals/plasti protective "tubes" in which the specific product is shipped are	with EU Directive 200 rnal design controls, substance is NOT ar his document, there r concern for any reg ility standard for plas ics/ made from polyviny best of its knowledg use it has been com closure as trade secu f the average weight	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidat ulatory scheme world-wide. Stics. You can access the UL iQTM family of datab I chloride (PVC) plastic. "Window envelopes" user bstances restricted by RoHS in Microchip Techno ge and belief, as of the date listed in this form. Mic piled based on the ranges provided in Material Sa rets and some information may not have been pro of these parts and the average weight of anticipat	e and, to the b le impurity co ases to obtain d to hold the p logy Incorpora rochip Techno fety Data Shee vided by subce de significant i	best of Microck ncentration of a test report a acking slip on legy Incorpora ts provided by ontract assem toxic metals cr	hip the at the outer ductor ated cannot r aw blers and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via inter chemical substance is absent from the list above, the chemical hnology Incorporated's knowledge and belief as of the date of the mical substance, if any, is not below the threshold of regulatory ding compounds used by Microchip meet the UL94 V0 flammab b://ul.com/global/eng/pages/offerings/industries/chemicals/plasti e protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in this ices in their original packing materials is true and correct to the rantee the completeness and accuracy of data in this form becz terial suppliers. Information is provided only as estimates of material suppliers.	with EU Directive 200 rnal design controls, substance is NOT ar his document, there i c concern for any reg ility standard for plas ics/ made from polyviny to best of its knowledg buse it has been com closure as trade seci f the average weight d non-metal materials , express or implied, subsidiaries are con	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidat ulatory scheme world-wide. Stics. You can access the UL iQTM family of datab I chloride (PVC) plastic. "Window envelopes" user bstances restricted by RoHS in Microchip Techno je and belief, as of the date listed in this form. Mic piled based on the ranges provided in Material Sa ets and some information may not have been pro of these parts and the average weight of anticipat is contained within silicon devices (silicon IC) in the with respect to the information provided in this de	e and, to the b ole impurity co ases to obtain d to hold the p rochip Techno fety Data Shee ed significant t e finished part:	best of Microco ncentration of a test report a acking slip on logy Incorpora ts provided by ontract assem toxic metals co s.	hip the at the outer ductor ated cannot r raw blers and omponents.		(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified via inter- chemical substance is absent from the list above, the chemical hnology Incorporated's knowledge and belief as of the date of the mical substance, if any, is not below the threshold of regulatory ding compounds used by Microchip meet the UL94 V0 flammabi- ://ul.com/global/eng/pages/offerings/industries/chemicals/plasti- protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information in this ces in their original packing materials is true and correct to the rantee the completeness and accuracy of data in this form becce erial suppliers. Supplier information is often protected from dis- material suppliers. Information is provided only as estimates of se estimates do not include trace levels of dopants, metals, and cochip Technology Incorporated does not provide any warranty ranties provided by Microchip Technology Incorporated and its	with EU Directive 200 rnal design controls, substance is NOT ar his document, there i concern for any reg ility standard for plas ics/ made from polyviny form concerning su best of its knowledg use it has been com closure as trade sect f the average weight d non-metal materials , express or implied, subsidiaries are con s.	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidat ulatory scheme world-wide. stics. You can access the UL iQTM family of datab chloride (PVC) plastic. "Window envelopes" used betances restricted by RoHS in Microchip Techno pied based on the ranges provided in Material Sa rets and some information may not have been pro of these parts and the average weight of anticipat is contained within silicon devices (silicon IC) in thi with respect to the information provided in this de tained in Microchip's standard terms and conditio Declarations and shall not be liable for any damage	e and, to the b ble impurity co ases to obtain d to hold the p logy Incorpora d significant i e finished part inclaration. The ns of sale. The	best of Microch ncentration of a test report a acking slip on logy Incorpora ted's semicon logy Incorpora ts provided by ontract assem toxic metals cr s. exclusive, lim ese are provide ndirect, conser	hip the at ductor ated cannot r raw blers and omponents. hited product ed in quential or	1.13	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.1

	e. I & N IF 44			nation Base / pper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			1807.79	(mg) Total	Mold Compound	% ot Total Weight	76.1
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1007.79	(ing) Total		J.	76.1
Silica, vitreous	60676-86-0	Mold Compound	64.685	1536.618	646,850		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.661	110.727	46,611		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Epoxy, Cresol Novolac	Trade Secret 29690-82-2	Mold Compound Mold Compound	4.661	110.727 44.291	46,611 18,645		Phenolic Resin Epoxy, Cresol Novolac	Trade Secret 29690-82-2	6.13 2.45	
Carbon Black	1333-86-4	Mold Compound	0.228	5.423	2,283		Carbon Black	1333-86-4	2.45	
Copper	7440-50-8	Lead Frame	21.460	509.786	214,598		Carbon Black	Total		
Silver	7440-30-0	Lead Frame	0.417	9.911	4,172	520.24	(mg) Total	Lead Frame	% of Total Weight	21.9
Zirconium	7440-67-7	Lead Frame	0.022	0.520	219	520.24	Copper	7440-50-8	97.99	21.5
Manganese	7439-96-5	Lead Frame	0.022	0.026	11		Silver	7440-30-8	1.91	
Silver	7440-22-4	Die Attach	0.104	2.461	1.036		Zirconium	7440-22-4 7440-67-7	0.10	
Epoxy resin	Trade Secret	Die Attach	0.032	0.765	322		Manganese	7439-96-5	0.01	
Gamma-butyrolactone	96-48-0	Die Attach	0.004	0.100	42			Total		I
Silicon	7440-21-3	Chip (Die)	0.870	20.667	8.700	3.33	(mg) Total	Die Attach	% of Total Weight	0.14
Gold	7440-57-5	Wire Bond	0.050	1,188	500	0.00	Silver	7440-22-4	74	0.14
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.940	22.330	9,400		Epoxy resin	Trade Secret	23	
		TOTALS:	100.000	2.375.540	1.000.000		Gamma-butyrolactone	96-48-0	3	
	2 3755	g Total Mass		,	,,			Total	100.00	1
	ernal design control	s, supplier declarations, and /or analytical test da	EU (RoHS Reca	,		20.67	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	0.87
bliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemica nology Incorporated's knowledge and belief as of the date o	al substance is NOT f this document, the	an intentional ingredient in the semiconductor development of the semiconductor de	ta. vice and, to the	e best of Micro	ochip	20.67	,	,	100	0.87
pliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulato ting compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped a	al substance is NOT f this document, then ry concern for any r bility standard for pl stics/	an intentional ingredient in the semiconductor dev re is no credible reason to believe that the unavoid egulatory scheme world-wide. lastics. You can access the UL iQTM family of data	ta. vice and, to the dable impurity o abases to obtai	e best of Micro concentration in a test repor	ochip of the t at	1.19	,	7440-21-3	100	0.87
mpliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemica shnology Incorporated's knowledge and belief as of the date or mical substance, if any, is not below the threshold of regulato ding compounds used by Microchip meet the UL94 V0 flamma s://ul.com/global/eng/pages/offerings/industries/chemicals/plate e protective "tubes" in which the specific product is shipped a a and certain "reels" may be made from PVC plastic.	al substance is NOT f this document, their ry concern for any r bility standard for pl stics/ re made from polyvii	an intentional ingredient in the semiconductor dev re is no credible reason to believe that the unavoid egulatory scheme world-wide. lastics. You can access the UL iQTM family of data nyl chloride (PVC) plastic. "Window envelopes" us	ta. vice and, to the dable impurity o abases to obtai sed to hold the	e best of Micro concentration in a test repor packing slip o	ochip of the t at on the outer		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight 100	
mpliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemical hnology incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulato ding compounds used by Microchip meet the UL94 V0 flamma o://ul.com/global/eng/pages/offerings/industries/chemicals/plat e protective "tubes" in which the specific product is shipped a t and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in the ices in their original packing materials is true and correct to the not guarantee the completeness and accuracy of data in this or material suppliers. Information is provided only as estimation in taw material suppliers. Information is provided only as estimation in the material suppliers.	al substance is NOT if this document, their ry concern for any r bility standard for pl stics/ re made from polyvin is form concerning : he best of its knowle form because it has m disclosure as tract tes of the average v	an intentional ingredient in the semiconductor dev e is no credible reason to believe that the unavoid egulatory scheme world-wide. lastics. You can access the UL iQTM family of data nyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Techn dge and belief, as of the date listed in this form. M been compiled based on the ranges provided in M le secrets and some information may not have bee eight of these parts and the average weight of an	ta. vice and, to the dable impurity of abases to obtai sed to hold the nology Incorpo licrochip Techr laterial Safety I en provided by ticipated signif	e best of Micro concentration in a test repor packing slip o rated's semic nology Incorpo Data Sheets p subcontract a ricant toxic me	ochip of the t at on the outer onductor orated assemblers stals		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemical choology Incorporated's knowledge and belief as of the date or emical substance, if any, is not below the threshold of regulato liding compounds used by Microchip meet the UL94 V0 flamma oc/lul.com/global/eng/pages/offerings/industries/chemicals/plate e protective "tubes" in which the specific product is shipped a c and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in the rices in their original packing materials is true and correct to the awaterial suppliers. Supplier information is often protected fro a raw material suppliers. Information is provided only as estima ponents. These estimates do not include trace levels of dopa rochip Technology Incorporated does not provide any warran duct warranties provided by Microchip Technology Incorporated ficrochip's quotations, sales order acknowledgement, and inv	al substance is NOT it his document, their ry concern for any r billity standard for pi stics/ re made from polyvin is form concerning r he best of its knowle form because it has m disclosure at trad tes of the average v nts, metals, and non ty, express or implie ed and its subsidiari	an intentional ingredient in the semiconductor devi- es is no credible reason to believe that the unavoid egulatory scheme world-wide. lastics. You can access the UL iQTM family of data nyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Techn dge and belief, as of the date listed in this form. M been compiled based on the ranges provided in M le secrets and some information may not have bee veight of these parts and the average weight of an -metal materials contained within silicon devices (d, with respect to the information provided in this	ta. vice and, to the dable impurity of abases to obtai sed to hold the nology Incorpo licrochip Techr laterial Safety I en provided by ticipated signif (silicon IC) in th declaration. Th	e best of Micro concentration in a test repor packing slip o rated's semic rology Incorpo Data Sheets p subcontract i ricant toxic me re finished pa ne exclusive, I	ochip of the t at on the outer orductor orated rovided by assemblers etals rts. imited	1.19	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
mpliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemical honology lncorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulato ding compounds used by Microchip meet the UL94 V0 flamma b://ul.com/global/eng/pages/offerings/industries/chemicals/pla- e protective "tubes" in which the specific product is shipped a a and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in the ices in their original packing materials is true and correct to the not guarantee the completeness and accuracy of data in this or material suppliers. Supplier information is often protected fro I aw material suppliers. Information is provided only as estima nonents. These estimates do not include trace levels of dopa rochip Technology Incorporated does not provide any warran duct warranties provided by Microchip Technology Incorporated	al substance is NOT if this document, their ry concern for any ri- bility standard for pl stics/ re made from polyvin is form concerning is to best of its knowle form because it has m disclosure as trac tes of the average v ints, metals, and non ty, express or implie ed and its subsidiari oices. ses to Material Contei rs' reliance on the ir	an intentional ingredient in the semiconductor dev e is no credible reason to believe that the unavoid egulatory scheme world-wide. lastics. You can access the UL iQTM family of data nyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Techr dge and belief, as of the date listed in this form. M been compiled based on the ranges provided in M le secrets and some information may not have bee veight of these parts and the average weight of an -metal materials contained within silicon devices (d, with respect to the information provided in this es are contained in Microchip's standard terms ar to Declarations and shall not be liable for any dam	ta. vice and, to the dable impurity of abases to obtai sed to hold the nology Incorpo licrochip Techr laterial Safety I en provided by ticipated signif (silicon IC) in th declaration. Th nd conditions of wages, direct or	e best of Micro concentration in a test repor packing slip o rated's semic Data Sheets p subcontract a ficant toxic me re finished pa ne exclusive, I of sale. These indirect, cons	ochip of the t at on the outer onductor ororated rovided by assemblers etals trs. imited are provided sequential or	1.19	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100 100.00 % of Total Weight 100 100.00	0.05
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemical hnology incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulato ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plat protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in th ices in their original packing materials is true and correct to ti not guarantee the completeness and accuracy of data in this uponents. These estimates do not include trace levels of dopa rochip Technology Incorporated does not provide any warran duct warranties provided by Microchip Technology Incorporated duc warranties provided by Microchip Technology Incorporated duct warranties novided by Microchip Technology Incorporated motorip's quotations, sales order acknowledgement, and inv prochip disclaims any duty to notify users of updates or chang- provise, suffered by users or third parties as a result of the use	al substance is NOT if this document, their ry concern for any ri- bility standard for pl stics/ re made from polyvin is form concerning is to best of its knowle form because it has m disclosure as trac tes of the average v ints, metals, and non ty, express or implie ed and its subsidiari oices. ses to Material Contei rs' reliance on the ir	an intentional ingredient in the semiconductor deve es is no credible reason to believe that the unavoid egulatory scheme world-wide. lastics. You can access the UL iQTM family of data nyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Techr dge and belief, as of the date listed in this form. M been compiled based on the ranges provided in M le secrets and some information may not have bee veight of these parts and the average weight of an -metal materials contained within silicon devices (d, with respect to the information provided in this es are contained in Microchip's standard terms ar to Declarations and shall not be liable for any dam	ta. vice and, to the dable impurity of abases to obtai sed to hold the nology Incorpo licrochip Techr laterial Safety I en provided by ticipated signif (silicon IC) in th declaration. Th nd conditions of wages, direct or	e best of Micro concentration in a test repor packing slip o rated's semic Data Sheets p subcontract a ficant toxic me re finished pa ne exclusive, I of sale. These indirect, cons	ochip of the t at on the outer onductor ororated rovided by assemblers etals trs. imited are provided sequential or	1.19	(mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00	0.05

Basic Substance CAS Number "Contained In" % Total ppm Slice, vitreous 60076-86-0 Mold Compound 24.038 1173.054 2403.00 (mg) Total Mold Compound 95.02 Epays Resin (No Br / CL SLOS, No diaminony trioxide) Trade Secret Mold Compound 1.732 84.559 17.222 Epays Resin (No Br / CL SLOS, No diaminony trioxide) Trade Secret 6.03 Phenolic Resin (No Br / CL SLOS, No diaminony trioxide) 138.06 (mg) Total Mold Compound 6.03 Phenolic Resin (No Br / CL SLOS, No diaminony trioxide) Trade Secret Mold Compound 0.069 4.17822 Bitor Trade Secret 6.13 Silver 7440607 Lead Finme 0.023 1.010 2254 2.020 (mg) Total Mold Compound 7.039 1.010 2.020 (mg) Total Mold Compound 7.040 <th>Semiconductor Device Typ</th> <th>e: L 68 (Lead) PL</th> <th></th> <th></th> <th>nation Base A pper Alloy (C</th> <th></th> <th></th> <th>•</th> <th>geneous Materials: g. pc boards, display</th> <th>s)</th> <th>JEDEC 97 Produ Marking and/o Pkg. Labeling e3</th>	Semiconductor Device Typ	e: L 68 (Lead) PL			nation Base A pper Alloy (C			•	geneous Materials: g. pc boards, display	s)	JEDEC 97 Produ Marking and/o Pkg. Labeling e3
Site Unspace 0001-09-0 Mode Compared 117.054 240.90 Site Site Wite Bite Site Wite Site <th< th=""><th></th><th></th><th>"Contained In"</th><th></th><th>mg/part</th><th>ppm</th><th>1380.06</th><th>(mg) Total</th><th>Mold Compound</th><th>% ot Total Weight</th><th>28.28</th></th<>			"Contained In"		mg/part	ppm	1380.06	(mg) Total	Mold Compound	% ot Total Weight	28.28
Encode Nation No. Train Statut Model Compound 17/20 84.538 17/20/20 Propring Nation Nationary Incode Nation No. Train Statut Model Compound 17/20 84.538 17/20/20 Propring Nation Nationary Incode Nation Nationary Incode Nation Nationary Incode Nation Nationary Incode Natingen Natingen Incode Nationary Incode Nationary Incode Nationary			•	•	0.			Silica, vitreous	60676-86-0	85.00	
Preside Risk mit VC IC SCO, be determinery troubing Trade Board Model Compound 17.32 (a) 44.558 (b) 17.32 (b) Model Compound (b) Model Compo							1				
Cate on Black 1338-964 Mode Compound 0.058 4.140 648 Calcon Black 1333-964 0.30 Copper 7.440-56.6 Lead Frame 0.22 20.061 4.234 109.95							1				
Coper 7440-004 Law Frame 20.071 1077.54 20.069 109.05 Biver 7440-224 Lad Frame 0.023 1.100 225 109.05 100.05 100.05 100.05 </td <td>Epoxy, Cresol Novolac</td> <td>29690-82-2</td> <td>Mold Compound</td> <td>0.693</td> <td>33.812</td> <td>6,929</td> <td>1</td> <td>Epoxy, Cresol Novolac</td> <td>29690-82-2</td> <td>2.45</td> <td></td>	Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.693	33.812	6,929	1	Epoxy, Cresol Novolac	29690-82-2	2.45	
Sher 1440-82-4 Lead Frame 0.490 2.084 4.294 1098-35 Impact Teal Lead Frame 5.07 Teal Weight 2.24 2000um 1400-87.1 Lead Frame 0.023 1100 225 100 200 0.025 1100 225 100 100 0.025 100 100 0.025 100 100 0.025 100 100 0.025 100	Carbon Black	1333-86-4	Mold Compound	0.085	4.140	848		Carbon Black	1333-86-4	0.30	
Zeronium 7440-67.7 Lead Finme 0.022 1.00 225 Start 97.99 Mangarese 7435-86-6 Lead Finme 0.022 1.00 225 Start 97.99 97.99 Silve in 7443-224 Dis Nitch 9.833 497.14 9.925 407.1 0.10 20.95 744.95% 97.99 Functional Markam Resin 72039-964 Dis Attach 0.333 16.238 3.283 6.465 646.55 668 746.922.4 158 Billion 744.921.3 Ope Attach 0.333 16.238 3.283 646.55 668 768 768 158 Billion 744.921.3 Unite Start 0.123 0.023 16.238 3.283 646.55 668 768 158 Billion 744.921.3 Unite Start 10.840 16.238 3.288 646.40 15 158 Billion 744.921.3 Unite Start 10.800 10.800 10.800 10.800 10.800	Copper	7440-50-8	Lead Frame	22.087	1077.843	220,869			Total	100.00	
Manganese 7440224 Deat Attach 0.001 0.000 0.001 0.000 0.001	Silver	7440-22-4	Lead Frame	0.429	20.954	4,294	1099.95	(mg) Total	Lead Frame	% of Total Weight	22.54
Silver 1440-02-4 De Attach 9.983 487.146 99.825 Employee Main and a stress of the st	Zirconium	7440-67-7	Lead Frame	0.023	1.100	225			7440-50-8	97.99	
Distant Resin 94-80-4 Die Attach 1.997 77.428 19.865 Langances 7269-96-5 0.01 Erow Resin 1003-06-5 Die Attach 0.655 3.267 6.655 464.33 (reg) Teal Die Attach 1.31 Erow Resin 1003-06-5 Die Attach 0.533 16.228 3.260 464.33 (reg) Teal Die Attach %. 47 Teal Weight 11.31 Gold 7440-07-5 Wirk Bond 5.120 249.856 51.200 184.400 75 Gold 7440-07-5 Wirk Bond 5.120 249.856 51.200 184.400 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.000 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 1.000.00 <t< td=""><td>Manganese</td><td>7439-96-5</td><td>Lead Frame</td><td>0.001</td><td>0.055</td><td>11</td><td>1</td><td>Silver</td><td>7440-22-4</td><td>1.91</td><td></td></t<>	Manganese	7439-96-5	Lead Frame	0.001	0.055	11	1	Silver	7440-22-4	1.91	
Functionalized lumbrane Resin 72889-864 De Attach 0.033 10.248 3.236 Constraints Total 100.00 Epoxy Resin 13061-06-5 Die Attach 0.333 16.228 3.236 6453 Total 744 15.3 Biltom 7440-31-5 Die Attach 0.333 16.228 3.236 State State State 10.440 15 10.440 15 10.440 15 10.440 15 10.440 15 10.440 15 10.440 15 10.440 15 10.440 15 10.440 15 10.000 <	Silver	7440-22-4	Die Attach	9.983	487.146	99,825	1	Zirconium	7440-67-7	0.10	
Epoxy Resin 9003-36-5 De Attach 0.333 16.238 3.282 448.35 (mg) Total De Attach Visit Integration Billion 7.4402-13 Chip (De) 1051-100 1021-100	Diester Resin	94-80-4	Die Attach	1.997	97.429	19,965	1	Manganese	7439-96-5	0.01	
Encor Resin 139610-06-5 Die Attach 0.333 16.238 3.336 Silicon 7440-27-5 Chip (Die) 12.310 800.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 123.00 100.00	Functionalized Urethane Resin	72869-86-4	Die Attach	0.666	32.476	6,655	1	. <u> </u>	Total	100.00	1
Encor Resin 139610-06-5 Die Attach 0.333 16.238 3.336 Silicon 7440-27-5 Chip (Die) 12.310 800.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.78 123.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 123.00 100.00	Epoxy Resin	9003-36-5	Die Attach	0.333	16.238	3.328	649.53	(mg) Total	Die Attach	% of Total Weight	13.31
Sile T440-21-3 Ohig (De) 12.310 600.72 123.100 Glid 7440-21-5 Wire Bond 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.85 5.120 248.95 1.000.00 100.00											
Opdit 7440-57-5 Wre Bond 5.120 248.856 51.200 Th 7440-57-5 Impact make jees: Uses Third and yees: Uses Third and Yee (Strick and Yee) (Strick											
Tin 7440-31-5 Pump or external table jump 1. Muse The runnabel at tor Cyte x how 104.400 809.872 104.400 Epox Real 9003-36-5 3 TOTALS: 100.000 4,880.000 1,000,000 4,880.000 1,000,000 Total 100.000 Total 100.000 4,880.000 1,000,000 4,880.000 1,000,0							Fur				
Assoug Total Mass Total St. 100.000 4.880.000 1,000,000 Encoded column Encoded column Total Mass Total Total Total emiconductor device and its homogenous materials comply with EU Directive 2002/35/EC (End-G-Li IV Vehicles (ELV) Directive). ED prective). ED precision Total Total 100.00 Issues direction Base of the direction of the direction of the device and, to the best of Microchip ology incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip ology incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical u.com/global/eng/pages/differing/findustrise/schemical/alplatics/ Chip Chip (Die) % of Total Weight 12.31 u.com/global/eng/pages/differing/findustrise/schemical/alplatics/ Total 100.00 100.00 248.86 (mg) Total Wire Bond % of Total Weight 5.12 total rotal Total 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100											
4.8800 g Total Mass Total Total 100.00 emiconductor device and its homogenous materials comply with EU Directive 2020/35/EC (RoHS Directive), EU Directive 2011/55/EU (RoHS Recast Directive) and with EU e00.73 Total (mg) Chip (Dia) % of Total Weight 12.31 iance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Doped Silicon 7440-21-3 100 iogo morportacide s knowledge and bielf as of the date of this document, thre is no concible reason to believe that the unavoidable impurity concentration of the chemical uncertified by Burcochip pase/offering/Andustries/Ahemical/Babistics/ Wire Bond % of Total Weight 5.12 iogo morportacid below the threshold of regulatory concerning substance is absent from the ist above, the chemical substance is bloged are made from polyvinyl chioride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box 249.86 (mg) Total Wire Bond % of Total Weight 5.12 io concluster withe absent from the substances or stricted by RoHS in Microchip Technology Incorporated semiconductor device and the asentipa social in this form concerning substances restricted by RoHS in Microchip Technology Incorporated semiconductor device and the average weight of the base of its knowledge and belief, as of the date issed in this form. Microchip Technology Incorporated semiconductor device semiconductor the set on porticel of trans incluster set weight of the base of the knoweight sis in the adorecret to the bast of its knowledge and belie											
emiconductor device and its homogenous materials somply with EU Directive 2002/BS/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU we 2002/SS/EC (End-rLife Vehicles (ELV) Directive). Bance with He above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. emical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip ology incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical u.com/global/ing/pages/offerings/industris/schemical/substance is shoped are made from polyviny choride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box rotatin "reels" may be made from PVC plastic. Total the completeness and accuracy of data in this form concerning substances restricted by RoHS in Microchip Technology Incorporated cannot tes the completeness and accuracy of data in this form concerning substances restricted by RoHS in Microchip Technology Incorporated cannot tes the completeness and accuracy of data in this form because it has been compled based on the ranges provided by subcornatic assemblers and raw material ares. Supplier Inducet is also bears to restricted within allicon divices (silicon IC) in the finished pars. They Technology Incorporated dees not provide any warranty, express or implied, with respect to the late in Microchip Technology incorporated and are material chained and within silicon dovices (silicon IC) in the finished pars. Thip Technology Incorporated dees not provide any warranty, express or implied, with respect to the information provided by subcornations of sale. These are provided in the original substances or the average weight of the substances distributes and covices (silicon IC) in the finished pars. Thip Technology Incorporated dees not provide a		4.8800 a	Total Mass						Total	100.00	
gc compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at al.com/global/eng/pages/offerings/industries/chemicals/plastics/ 249.86 (mg) Total Wire Bond % of Total Weight 5.12 order: "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box Doped Gold 7440-57-5 100 hip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor is the oreglead in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material ers. Information is provided only as estimates of the average weight of these parts and conditions of sale. These are provided in this form. Microchip's standard terms and conditions of sale. These are provided in this declaration. The exclusive, limited product in this ground and the parts are contained in Microchip's standard terms and conditions of sale. These are provided in due to the part and are result of the user's reliance on the information in provide of vany damages, direct or indirect, consequential or the parts as a res										70 OF FOLD Weight	12.31
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor es in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot there the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material ers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material ers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. These tates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product nities provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in thip's quotations, sales order acknowledgement, and invoices. chip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or vise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or of this Certificate of Compliance for semiconductor products. Tin 7440-31-5 100.00	nemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of t	substance is NOT an in his document, there is	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidabl					Doped Silicon	7440-21-3	100	12.31
Interpretation of provide any wait rate, express of indirect, with respect to the information provide in this declaration. The exclusive, minute product is the provided in this declaration. The exclusive, minute product is the provided in this declaration. The exclusive, minute product is the provided in the provided in the provided in this declaration. The exclusive, minute product is the provided in the provided in the provided in the product is the provided in the provided in the provided in the product is the provided in the provided	hemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of t tance, if any, is not below the threshold of regulatory concern ing compounds used by Microchip meet the UL94 V0 flammab /ul.com/global/eng/pages/offerings/industries/chemicals/plast protective "tubes" in which the specific product is shipped are	substance is NOT an in his document, there is for any regulatory scho illity standard for plastic ics/	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidabl ame world-wide. cs. You can access the UL iQTM family of databa	e impurity con ses to obtain a	centration of th	he chemical	249.86	(mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
vise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or of this Certificate of Compliance for semiconductor products.	hemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of t tance, if any, is not below the threshold of regulatory concern ing compounds used by Microchip meet the UL94 V0 flammab /ul.com/global/eng/pages/offerings/industries/chemicals/plast protective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic. http://prechnology Incorporated believes the information in this ses in their original packing materials is true and correct to the antee the completeness and accuracy of data in this form becc liers. Supplier information is often protected from disclosure a liers. Information is provided only as estimates of the average	substance is NOT an in his document, there is for any regulatory schu- ility standard for plasti- ics/ e made from polyvinyl c s form concerning subs best of its knowledge ause it has been compil as trade secrets and so weight of these parts a	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidable ame world-wide. cs. You can access the UL iQTM family of databa hloride (PVC) plastic. "Window envelopes" used tances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro ed based on the ranges provided in Material Saf me information may not have been provided by s and the average weight of anticipated significant	e impurity con ses to obtain a to hold the pac ogy Incorporate ochip Technolo ty Data Sheets subcontract ass	test report at king slip on th d's semicondu gy Incorporate provided by r emblers and r	he chemical he outer box uctor ed cannot aw material raw material	249.86	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
	hemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of t tance, if any, is not below the threshold of regulatory concern ing compounds used by Microchip meet the UL94 V0 flammab /ul.com/global/eng/pages/offerings/industries/chemicals/plast protective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic. http://prechnology Incorporated believes the information in this es in their original packing materials is true and correct to the antee the completeness and accuracy of data in this form becc liers. Supplier information is often protected from disclosure a tates do not include trace levels of dopants, metals, and non-n hochip Technology Incorporated does not provide any warranty anties provided by Microchip Technology Incorporated and its	substance is NOT an in his document, there is for any regulatory schu- ility standard for plasti- ics/ e made from polyvinyl c s form concerning subs b best of its knowledge ause it has been compil as trade secrets and so weight of these parts a netal materials containor , express or implied, w subsidiaries are conta	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidable ame world-wide. cs. You can access the UL iQTM family of databa hloride (PVC) plastic. "Window envelopes" used tances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micr ed based on the ranges provided in Material Safe me information may not have been provided by and the average weight of anticipated significant ad within silicon devices (silicon IC) in the finishe th respect to the information provided in this devi	e impurity con ses to obtain a to hold the pac objy Incorporate ochip Technolo sty Data Sheets toxic metals co d parts. claration. The e	centration of t test report at iking slip on th d's semicondu gy Incorporate provided by r emblers and r mponents. Th xclusive, limite	he chemical he outer box uctor ed cannot aw material aw material ese ed product		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	5.12
	temical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of t ance, if any, is not below the threshold of regulatory concern ng compounds used by Microchip meet the UL94 V0 flammab (ul.com/global/eng/pages/offerings/industries/chemicals/plast rotective "tubes" in which the specific product is shipped are ertain "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in this as in their original packing materials is true and correct to the nee the completeness and accuracy of data in this form beca iers. Supplier information is often protected from disclosure a iers. Information is provided only as estimates of the average ates do not include trace levels of dopants, metals, and non-n chip Technology Incorporated does not provide any warranty nties provided by Microchip Technology Incorporated and its chip's quotations, sales order acknowledgement, and invoice chip disclaims any duty to notify users of updates or changes wise, suffered by users or third parties as a result of the users	substance is NOT an in his document, there is for any regulatory scho- ility standard for plasti- ics/ a made from polyvinyl of a form concerning subs best of its knowledge ause it has been compil as trade secrets and so weight of these parts a metal materials containut , express or implied, w subsidiaries are conta s.	Antentional ingredient in the semiconductor device no credible reason to believe that the unavoidable ame world-wide. CS. You can access the UL iQTM family of databa hloride (PVC) plastic. "Window envelopes" used tances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micr ed based on the ranges provided in Material Saf me information may not have been provided by s and the average weight of anticipated significant ad within silicon devices (silicon IC) in the finishe th respect to the information provided in this dec ned in Microchip's standard terms and condition eclarations and shall not be liable for any damage	e impurity con ses to obtain a to hold the par opy Incorporate ochip Technolo ty Data Sheets ubcontract as toxic metals co variation. The e s of sale. Thes	centration of t test report at king slip on th d's semicondu gy Incorporate provided by r emblers and r mponents. Th xclusive, limitu e are provided irect, consequ	he chemical he outer box uctor ad cannot aw material ese ed product l in uential or		(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100 100.00 % of Total Weight 100 100.00	5.12

Semiconductor Device	Type: Al2 10 QFN 1.3x1	8x0.55 2V		ination Base opper Alloy				ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Markir and/or Pkg. Labeling e4
		"Contained In"	% Total			4.04	(mg) Total	Mold Compound	% ot Total Weight	36.7
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	4.04	(ing) Totai	Mola Compound	% of Total Weight	30.7
Silica, fused	60676-86-0	Mold Compound	33.030	3.633	330,300		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.780	0.196	17,800		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	1.780	0.196	17,800		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.110	0.012	1,101		Carbon Black	1333-86-4	0.30	ļ
Copper	7440-50-8	Lead Frame	39.239	4.316	392,393			Total		
Nickel	7440-02-0	Lead Frame	1.046	0.115	10,465	4.53	(mg) Total	Lead Frame	% of Total Weight	41.2
Silicon	7440-21-3	Lead Frame	0.185	0.020	1,854		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.041	0.005	412		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.688	0.076	6,876	-	Silicon	7440-21-3	0.45	
Aluminum oxide	1344-28-1	Die Attach	0.068	0.008	683		Magnesium	7439-95-4	0.10	
Diethylene glycol monoethyl ether acetate	112-15-2	Die Attach	0.068	0.008	683		Silver	7440-22-4	1.67	ļ
Epoxy resin (Trade Secret - 10114)	Trade Secret	Die Attach	0.037	0.004	373			Total		
Epoxy resin (Trade Secret - 10105)	Trade Secret	Die Attach	0.019	0.002	186	0.02	(mg) Total	Die Attach	% of Total Weight	0.2
Amine (Trade Secret - 10039)	Trade Secret	Die Attach	0.007	0.001	75		Aluminum oxide	1344-28-1	34.16	
Silicon	7440-21-3	Chip (Die)	14.000	1.540	140,000	Diethylene gly	col monoethyl ether acetate	112-15-2	34.16	
Doped Gold	7440-57-5	Wire Bond	6.000	0.660	60,000		Epoxy resin (Trade Secret		18.63	
Tin	7440-31-5	Plating on external leads (pins)	1.815	0.200	18,145		Epoxy resin (Trade Secret		9.32	
Silver	7440-22-4	Plating on external leads (pins)	0.076	0.008	760		Amine (Trade Secret - 100		4	
Copper	7440-50-8	Plating on external leads (pins)	0.010	0.001	95			Total	100.00	
		ΤΟΤΑ	LS: 100.000	11.000	1,000,000	1.54	(mg) Total	Chip (Die)	% of Total Weight	14
	0.0110 g To	otal Mass					Doped Silicon			
	nply with EU Directive 2002/95/	EC (RoHS Directive), EU Directive 2011/65/EU (I	RoHS Recast Dire	ctive) and wi	th EU		Doped Silicon	7440-21-3 Total	100 100.00	1
semiconductor device and its homogenous materials cor tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via			RoHS Recast Dire	ective) and wit	th EU	0.66	(mg) Total			
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iliance with the above EU Directives has been verified via remical substance is absent from the list above, the chern porated's knowledge and belief as of the date of this doc	a internal design controls, supp nical substance is NOT an inter ument, there is no credible reas	lier declarations, and /or analytical test data. Itional ingredient in the semiconductor device a	ind, to the best o	f Microchip T	echnology	0.66	·	Total	100.00	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via emical substance is absent from the list above, the cher oprated's knowledge and belief as of the date of this doc s not below the threshold of regulatory concern for any r ng compounds used by Microchip meet the UL94 V0 flan	a internal design controls, supp nical substance is NOT an inter ument, there is no credible rear egulatory scheme world-wide. nmability standard for plastics.	lier declarations, and /or analytical test data. ational ingredient in the semiconductor device is non to believe that the unavoidable impurity co	and, to the best o	f Microchip To chemical sul	echnology	0.66	(mg) Total	Total Wire Bond	100.00 % of Total Weight 100.00	6
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	a internal design controls, supp nical substance is NOT an inter ument, there is no credible rear egulatory scheme world-wide. nmability standard for plastics. plastics/	lier declarations, and <i>l</i> or analytical test data. Itional ingredient in the semiconductor device a ison to believe that the unavoidable impurity co You can access the UL iQTM family of databas	ind, to the best o icentration of the es to obtain a tes	f Microchip Tr chemical sul t report at	echnology bstance, if	0.66	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight 100.00	6
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via semical substance is absent from the list above, the cher porated's knowledge and belief as of the date of this doc s not below the threshold of regulatory concern for any r ng compounds used by Microchip meet the UL94 V0 flan u.com/global/eng/pages/offerings/industries/chemicals/ rotective "tubes" in which the specific product is shippe	a internal design controls, supp nical substance is NOT an inter ument, there is no credible reat egulatory scheme world-wide. nmability standard for plastics. plastics/ d are made from polyvinyl chlo n this form concerning substar of its knowledge and belief, as s been compiled based on the I s and some information may m is and the average weight of ar	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device a ion to believe that the unavoidable impurity con You can access the UL iQTM family of databas ride (PVC) plastic. "Window envelopes" used t icces restricted by RoHS in Microchip Technolog of the date listed in this form. Microchip Technolog of the date listed in Material Safety Data Sheets is thave been provided by subcontract assemble ticipated significant toxic metals components.	and, to the best o centration of the es to obtain a tes o hold the packin y Incorporated's provided by raw i rs and raw mate	f Microchip Tr chemical sul t report at g slip on the o semiconduct d cannot gua naterial suppliers.	echnology bstance, if outer box and tor devices in irantee the liers. Supplier Information is	0.21	(mg) Total	Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100.00 100.00	6
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified via termical substance is absent from the list above, the cherr borated's knowledge and belief as of the date of this doc s not below the threshold of regulatory concern for any r ng compounds used by Microchip meet the UL94 V0 flan ul.com/global/eng/pages/offerings/industries/chemicals/ rotective "tubes" in which the specific product is shippe n "reels" may be made from PVC plastic. chip Technology Incorporated believes the information i original packing materials is true and correct to the best leteness and accuracy of data in this form because it has nation is often protected from disclosure as trade secret ied only as estimates of the average weight of these pari	a internal design controls, supp nical substance is NOT an inter ument, there is no credible reat egulatory scheme world-wide. nmability standard for plastics. plastics/ d are made from polyvinyl chlo n this form concerning substar of its knowledge and belief, as s been compiled based on the r s and the average weight of ar silicon devices (silicon IC) in th ranty, express or implied, with	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device is to to believe that the unavoidable impurity con- You can access the UL iQTM family of databas ride (PVC) plastic. "Window envelopes" used t tices restricted by RoHS in Microchip Technolog of the date listed in this form. Microchip Technolog of the date listed in Material Safety Data Sheets is thave been provided by subcontract assemble ticipated significant toxic metals components. e finished parts. respect to the information provided in this decl	and, to the best o ccentration of the es to obtain a tes o hold the packin y Incorporated's logy Incorporate rovided by raw i rs and raw mate These estimates aration. The excli	f Microchip Tr chemical sul t report at g slip on the d semiconduct d cannot gua naterial suppli rial suppliers. do not includ usive, limited	echnology bstance, if outer box and tor devices in rrantee the liers. Supplier Information is e trace levels product	0.21	(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100.00 100.00 % of Total Weight	6
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via emical substance is absent from the list above, the cherr orated's knowledge and belief as of the date of this doc not below the threshold of regulatory concern for any r ag compounds used by Microchip meet the UL94 V0 flan ul.com/global/eng/pages/offerings/industries/chemicals/ otective "tubes" in which the specific product is shippe "reels" may be made from PVC plastic. thip Technology Incorporated believes the information i riginal packing materials is true and correct to the best eteness and accuracy of data in this form because it has ation is often protected from disclosure as trade secret ed only as estimates of the average weight of these para ants, metals, and non-metal materials contained within thip Technology Incorporated does not provide any war ties provided by Microchip Technology Incorporated ar	a internal design controls, supp nical substance is NOT an inter ument, there is no credible rea: egulatory scheme world-wide. mability standard for plastics. plastics/ d are made from polyvinyl chlo n this form concerning substan of its knowledge and belief, as a been compiled based on the r s and the average weight of ar silicon devices (silicon IC) in the ranty, express or implied, with ad its subsidiaries are containe	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device a ion to believe that the unavoidable impurity con You can access the UL iQTM family of databas ride (PVC) plastic. "Window envelopes" used t icces restricted by RoHS in Microchip Technolog of the date listed in this form. Microchip Technolog is provided in Microchip Second to the date listed in this decl d in Microchip's standard terms and conditions rations and shall not be liable for any damages	and, to the best o ccentration of the es to obtain a tes o hold the packin y Incorporated's ylogy Incorporate rovided by raw n rs and raw mate These estimates aration. The excl of sale. These ar , direct or indirect	f Microchip T chemical sul t report at g slip on the d semiconduct d cannot gua naterial suppliers. do not includ usive, limited e provided in t, consequen	echnology bstance, if outer box and tor devices in rrantee the liers. Supplier Information is e trace levels product Microchip's tial or	0.21	(mg) Total Doped Gold (mg) Total Tin	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-31-5	100.00 % of Total Weight 100.00 % of Total Weight 95.50	6
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified via emical substance is absent from the list above, the cherrorated's knowledge and belief as of the date of this doc not below the threshold of regulatory concern for any ri- g compounds used by Microchip meet the UL94 V0 flam l.com/global/eng/pages/offerings/industries/chemicals/ otective "tubes" in which the specific product is shippe "reels" may be made from PVC plastic. thip Technology Incorporated believes the information i riginal packing materials is true and correct to the best steiness and accuracy of data in this form because it has ation is often protected from disclosure as trade secret: ed only as estimates of the average weight of these para ants, metals, and non-metal materials contained within hip Technology Incorporated does not provide any war tites provided by Microchip Technology Incorporated hip disclaims any duty to notify users of updates or cha- sie, suffered by users or third parties as a result of the	a internal design controls, supp nical substance is NOT an inter ument, there is no credible rea: egulatory scheme world-wide. mability standard for plastics. plastics/ d are made from polyvinyl chlo n this form concerning substan of its knowledge and belief, as a been compiled based on the r s and the average weight of ar silicon devices (silicon IC) in the ranty, express or implied, with ad its subsidiaries are containe	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device a ion to believe that the unavoidable impurity con You can access the UL iQTM family of databas ride (PVC) plastic. "Window envelopes" used t icces restricted by RoHS in Microchip Technolog of the date listed in this form. Microchip Technolog is provided in Microchip Second to the date listed in this decl d in Microchip's standard terms and conditions rations and shall not be liable for any damages	and, to the best o ccentration of the es to obtain a tes o hold the packin y Incorporated's ylogy Incorporate rovided by raw n rs and raw mate These estimates aration. The excl of sale. These ar , direct or indirect	f Microchip T chemical sul t report at g slip on the d semiconduct d cannot gua naterial suppliers. do not includ usive, limited e provided in t, consequen	echnology bstance, if outer box and tor devices in rrantee the liers. Supplier Information is e trace levels product Microchip's tial or	0.21	(mg) Total Doped Gold (mg) Total Tin Silver	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-31-5 7440-22-4	100.00 % of Total Weight 100.00 % of Total Weight 95.50 4.00 0.50	6

				nation Base opper Alloy ((•	ogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Devi	ce Type: KP QFN 12									65
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	2.58	(mg) Total	Mold Compound	% ot Total Weight	10.14
Silica, fused	60676-86-0	Mold Compound	9.126	2.320	91,260		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	0.492	0.125	4,918		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	0.492	0.125	4,918		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.030	0.008	304		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	74.777	19.008	747,772			Total	100.00	
Iron	7439-89-6	Lead Frame	1.839	0.468	18,393	19.90	(mg) Total	Lead Frame	% of Total Weight	78.27
Silver	7440-22-4	Lead Frame	1.491	0.379	14,910		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.098	0.025	978		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.065	0.016	646		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.518	0.132	5,180		Zinc	7440-66-6	0.13	
Epoxy resin	68475-94-5	Die Attach	0.140	0.036	1,400		Phosphorous	7723-14-0	0.08	
Copper(II) oxide	1317-38-0	Die Attach	0.021	0.005	210			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.021	0.005	210	0.18	(mg) Total	Die Attach	% of Total Weight	0.7
Silicon	7440-21-3	Chip (Die)	6.710	1.706	67,100		Silver	7440-22-4	74.00	
Copper	7440-50-8	Wire Bond	0.206	0.052	2,063		Epoxy resin	68475-94-5	20.00	
Palladium	7440-05-3	Wire Bond	0.004	0.001	37		Copper(II) oxide	1317-38-0	3.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.970	1.009	39,700 1.000.000		Gamma-butyrolactone	96-48-0	3.00 100.00	
		TOTALS:	100.000	25.420						
					1,000,000			Total		
	s comply with EU Directive 20	g Total Mass 102/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Dire		,,	1.71	(mg) Total Doped Silicon	Total Chip (Die) 7440-21-3	% of Total Weight	6.71
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	s comply with EU Directive 20).	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire		,,	1.71		Chip (Die)	% of Total Weight	6.71
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verifie chemical substance is absent from the list above, the rporated's knowledge and belief as of the date of this	s comply with EU Directive 20). d via internal design controls chemical substance is NOT a document, there is no credib	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH: s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	to the best o	ctive) and wit f Microchip Te	ch EU	0.05		Chip (Die) 7440-21-3	% of Total Weight	6.71 0.21
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) opliance with the above EU Directives has been verifie- chemical substance is absent from the list above, the e rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0	s comply with EU Directive 20). d via internal design controls chemical substance is NOT a document, there is no credib ny regulatory scheme world- flammability standard for pla	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH: s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	to the best o tration of the	ctive) and wit f Microchip Te chemical sub	ch EU		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the orporated's knowledge and belief as of the date of this <i>t</i> , is not below the threshold of regulatory concern for a lding compounds used by Microchip meet the UL94 V0 o//ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi	s comply with EU Directive 20). d via internal design controls chemical substance is NOT a document, there is no credib nny regulatory scheme world flammability standard for pla cals/plastics/	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide.	to the best o atration of the pobtain a tes	ctive) and wit f Microchip Te chemical sub t report at	h EU echnology ostance, if		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the or orporated's knowledge and belief as of the date of this r, is not below the threshold of regulatory concern for a iding compounds used by Microchip meet the UL94 V0 b://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi it certain "reels" may be made from PVC plastic.	s comply with EU Directive 20). d via internal design controls chemical substance is NOT a document, there is no credib my regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyving	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. sstics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho	to the best o itration of the o obtain a tes Id the packin	ctive) and wit f Microchip Te chemical sub t report at g slip on the c	ch EU echnology ostance, if		(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98.25	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the o orporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a lding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi I certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati heir original packing materials is true and correct to the npleteness and accuracy of data in this form because is opplier information is often protected from disclosure as protide only as estimates of the average w	comply with EU Directive 20). d via internal design controls chemical substance is NOT at document, there is no credition any regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyvin ion in this form concerning si e best of its knowledge and b t has been compiled based o t trade secrets and some info veight of these parts and the	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In helief, as of the date listed in this form. Microchip Technology In n the ranges provided in Material Safety Data Sheets prov rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	to the best o stration of the o obtain a tes Id the packin scorporated's ogy Incorpor- ided by raw r emblers and r	ctive) and wit f Microchip Te chemical sub t report at g slip on the o semiconduct ated cannot g material suppl aw material s	ch EU echnology ostance, if outer box or devices uarantee the iers.		(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98.25 1.75 1.75	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verifie- ic chemical substance is absent from the list above, the <i>i</i> corporated's knowledge and belief as of the date of this y, is not below the threshold of regulatory concern for a idding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi d certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informati their original packing materials is true and correct to the mpleteness and accuracy of data in this form because it pplier information is often protected from disclosure argo utube trace levels of dopants, metals, and non-metal main crochip Technology Incorporated does not provide any	comply with EU Directive 20). d via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyvin ion in this form concerning s e best of its knowledge and b t has been compiled based o a trade secrets and some info usight of these parts and the terials contained within silico warranty, express or implied	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In helief, as of the date listed in this form. Microchip Technology In n the ranges provided in Material Safety Data Sheets prov rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	to the best o attration of the o obtain a tes old the packin accorporated's ogy Incorpora- ided by raw r emblers and r nponents. Th	ctive) and wit f Microchip Te chemical sub t report at g slip on the o semiconduct ated cannot g naterial s ese estimates usive, limited	h EU echnology ostance, if outer box or devices uarantee the iers. uppliers. s do not product		(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98.25 1.75 1.75	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the o orporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi l certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati heir original packing materials is true and correct to the npleteness and accuracy of data in this form because in opplier information is often protected from disclosure as protein zeroking values of dopants, metals, and non-metal ma rochip Technology Incorporated does not provide any ranties provided only as estimates of the average w ude trace levels of dopants, metals, and non-metal ma rochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorporate tations, sales order acknowledgement, and invoices.	comply with EU Directive 20). d via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyving ion in this form concerning size best of its knowledge and b tas been compiled based o trade secrets and some info weight of these parts and the terials contained within silice warranty, express or implied and its subsidiaries are con r changes to Material Contem the users' reliance on the infi	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In helief, as of the date listed in this form. Microchip Technology In n the ranges provided in Material Safety Data Sheets prov rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con on devices (silicon IC) in the finished parts.	to the best o thration of the b obtain a tes o obtain a tes ld the packin accorporated's ogy incorpor- ided by raw r pmblers and r nponents. Th ion. The exclu- cale. These ar ect or indirec	ctive) and wit f Microchip Te chemical sub t report at g slip on the o semiconduct ated cannot g material suppl aw material s ese estimates usive, limited e provided in t, consequent	h EU echnology ostance, if outer box or devices uarantee the iers. uppliers. s do not product Microchip's tial or	0.05	(mg) Total Copper Palladium	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 50°C for 1	% of Total Weight 100 100.00 % of Total Weight 98.25 1.75 100.00	0.21
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) apliance with the above EU Directives has been verifie- chemical substance is absent from the list above, the e rprorated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati- pier original packing materials is true and correct to the upleteness and accuracy of data in this form because in pier information is often protected from disclosure as mation is provided only as estimates of the average er ude trace levels of dopants, metals, and non-metal ma rochip Technology Incorporated does not provide any ranties spovided by Microchip Technology Incorporate tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates on rwise, suffered by users or third parties as a result of	comply with EU Directive 20). d via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyving ion in this form concerning size best of its knowledge and b tas been compiled based o trade secrets and some info weight of these parts and the terials contained within silice warranty, express or implied and its subsidiaries are con r changes to Material Contem the users' reliance on the infi	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In helief, as of the date listed in this form. Microchip Technology In n the ranges provided in Material Safety Data Sheets prov mation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con on devices (silicon IC) in the finished parts. , with respect to the information provided in this declarati ntained in Microchip's standard terms and conditions of s toeclarations and shall not be liable for any damages, dir	to the best o thration of the b obtain a tes o obtain a tes ld the packin accorporated's ogy incorpor- ided by raw r pmblers and r nponents. Th ion. The exclu- cale. These ar ect or indirec	ctive) and wit f Microchip Te chemical sub t report at g slip on the o semiconduct ated cannot g material suppl aw material s ese estimates usive, limited e provided in t, consequent	h EU echnology ostance, if outer box or devices uarantee the iers. uppliers. s do not product Microchip's tial or	0.05	(mg) Total Copper Palladium (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight 98.25 1.75 100.00 % of Total Weight	0.21

ICROCHIP Semiconductor Device		2mm (2011)		nation Base A pper Alloy (C	-		Package Homo	geneous Materials		JEDEC 97 Product Markin and/or Pkg. Labeling e3
Semiconductor Device		"Contained In"	% I otal		r F					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	13.79	(mg) Total	Mold Compound	% ot Total Weight	63.82
Silica, fused	60676-86-0	Mold Compound	57.438	12.407	574,380		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	3.095	0.669	30,953		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.095	0.669	30,953		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.191	0.041	1,915		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	22.289	4.814	222,889			Total	100.00	
Iron	7439-89-6	Lead Frame	0.548	0.118	5,483	5.04	(mg) Total	Lead Frame	% of Total Weight	23.33
Silver	7440-22-4	Lead Frame	0.444	0.096	4,444		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.029	0.006	292		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.019	0.004	192		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.273	0.059	2,730		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.063	0.014	630		Phosphorous	7723-14-0	0.08	
Treated silica	Trade Secret	Die Attach	0.007	0.002	70			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.007	0.002	70	0.08	(mg) Total	Die Attach	% of Total Weight	0.35
Silicon	7440-21-3	Chip (Die)	5.350	1.156	53,500		Silver	7440-22-4	78.00	
Copper	7440-50-8	Wire Bond Copper Palladium coated (CuPd)	1.808	0.390	18.078		Acrylate resins Proprietary	Trade Secret	18.00	
Palladium	7440-05-3	Wire Bond Copper Palladium coated (CuPd)	0.032	0.007	322		Treated silica	Trade Secret	2.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	5.310	1,147	53,100	ł	leterocyclic organic compou	Trade Secret	2.00	
			100.000	21.600	1.000.000			Total	100.00	
		IOTALS:	100.000					Iotal	100.00	
		TOTALS: <u>g Total Mass</u> 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS			,,	1.16	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	5.35
semiconductor device and its homogenous materials c tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified v	omply with EU Directive 2	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS			,,	1.16	(0,	Chip (Die)	% of Total Weight	5.35
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified v nemical substance is absent from the list above, the cho	omply with EU Directive 2 via internal design contro emical substance is NOT ocument, there is no credi	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	S Recast Direct	tive) and with Microchip Teo	EU chnology	1.16 0.40	(0,	Chip (Die) 7440-21-3	% of Total Weight	5.35
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified v nemical substance is absent from the list above, the chh porated's knowledge and belief as of the date of this do s not below the threshold of regulatory concern for any	omply with EU Directive 2 via internal design contro emical substance is NOT ocument, there is no credi v regulatory scheme work ammability standard for p	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	S Recast Direct to the best of tration of the	tive) and with Microchip Teo chemical subs	EU chnology		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond Copper Palladium	% of Total Weight 100 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified was nemical substance is absent from the list above, the che porated's knowledge and belief as of the date of this do s not below the threshold of regulatory concern for any ing compounds used by Microchip meet the UL94 V0 fla /ul.com/global/eng/pages/offerings/industries/chemical	omply with EU Directive 2 via internal design contro emical substance is NOT woument, there is no credi regulatory scheme work ammability standard for p s/plastics/	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide.	S Recast Direct to the best of tration of the obtain a test	tive) and with Microchip Teo chemical subs report at	EU chnology stance, if		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond Copper Palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98 2	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified v nemical substance is absent from the list above, the chh or and the threshold of regulatory concern for any ing compounds used by Microchip meet the UL94 V0 fit /ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp in "reels" may be made from PVC plastic. whip Technology Incorporated believes the information original packing materials is true and correct to the bes bleteness and accuracy of data in this form because it ha mation is often protected from disclosure as trade secret	omply with EU Directive 2 via internal design contro emical substance is NOT coument, there is no credi regulatory scheme work ammability standard for p s/plastics/ ped are made from polyvi a in this form concerning t of its knowledge and be as been compiled based ets and some information arts and the average weig	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	S Recast Direct to the best of tration of the d obtain a test d the packing corporated's s / Incorporated ided by raw m d raw materi	tive) and with Microchip Ted chemical subs report at selip on the ou semiconducto d cannot guara aterial suppliers. In	EU chnology stance, if uter box and r devices in antee the ers. Supplier nformation is		Copper	Chip (Die) 7440-21-3 Total Wire Bond Copper Palladium coated (CuPd) 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98 2	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified we perial substance is absent from the list above, the chh- porated's knowledge and belief as of the date of this do s not below the threshold of regulatory concern for any ing compounds used by Microchip meet the UL94 V0 fla /ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp in "reels" may be made from PVC plastic. The product of the believes the information original packing materials is true and correct to the besidet on soft and activacy of data in this form because it h nation is often protected from disclosure as trade secred ded only as estimates of the average weight of these papants, metals, and non-metal materials contained within the provide any we	omply with EU Directive 2 via internal design contro emical substance is NOT scument, there is no credi regulatory scheme work ammability standard for p s/plastics/ bed are made from polyvi a in this form concerning t of its knowledge and be as been compiled based ats and some information arts and the average weig n silicon devices (silicon arranty, express or impile	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	S Recast Direct to the best of tration of the o obtain a test d the packing corporated's a / Incorporated ded by raw m nd raw materi- ise estimates d on. The exclusion	tive) and with Microchip Tec chemical subs report at semiconducto d cannot guara aterial supplie al suppliers. In o not include sive, limited p	EU chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct		Copper Silicon Copper Palladium (mg) Total (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond Copper Palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98 2	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Jliance with the above EU Directives has been verified venemical substance is absent from the list above, the chro- porated's knowledge and belief as of the date of this do s not below the threshold of regulatory concern for any ing compounds used by Microchip meet the UL94 V0 fla /ul.com/global/eng/pages/offerings/industries/chemical rotective "tubes" in which the specific product is shipp in "reels" may be made from PVC plastic. The production protected from disclosure as trade secre ded only as estimates of the average weight of these pa- pants, metals, and non-metal materials contained within thoms, sales order acknowledgement, and invoices. totions, sales order acknowledgement, and invoices.	omply with EU Directive 2 via internal design contro emical substance is NOT ocument, there is no credi regulatory scheme work ammability standard for p s/plastics? we are made from polyvi in this form concerning to of its knowledge and be as been compiled based ats and some information arrs and the average weig n silicon devices (silicon arranty, express or implie and its subsidiaries are c hanges to Material Conte e users' reliance on the ir	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts.	S Recast Direct to the best of tration of the o obtain a test d the packing corporated's a / Incorporated's a / Incorporated ded by raw m and raw materia e estimates d on. The exclus- ale. These are sect or indirect	tive) and with Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial supplies. In o not include sive, limited p provided in M , consequentia	EU chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.40	Copper Silicon Copper Palladium (mg) Total (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond Copper Palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 50°C for 1	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	1.84

MICROCHIP Semiconductor Device	Type: ML 16 QFN	4x4x0.9mm (D5)		ation Base A oper Alloy (C	-		Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	19.49	(mg) Total	Mold Compound	% ot Total Weight	46.75
Silica, fused	60676-86-0	Mold Compound	42.075	17.545	420.750		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	2.267	0.945	22,674		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.267	0.945	22,674		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.140	0.058	1.403		Carbon Black		0.30	
Copper	7440-50-8	Lead Frame	38.511	16.059	385,112		Calborr black	Total	100.00	
Iron	7439-89-6	Lead Frame	0.947	0.395	9,473	16.81	(mg) Total	Lead Frame	% of Total Weight	40.31
Silver	7433-03-0	Lead Frame	0.768	0.330	7.679	10.01		7440-50-8	95.54	40.31
Zinc	7440-22-4	Lead Frame	0.050	0.021	504		Copper	7440-50-8 7439-89-6	2.35	
Phosphorous	7440-66-6	Lead Frame	0.033	0.021	333		Silver	7439-89-6 7440-22-4	2.35	
Silver	7440-22-4	Die Attach	1.022	0.014	10.218		Zinc	7440-22-4 7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.236	0.426	2,358		Phosphorous		0.08	
							Phosphorous	7723-14-0		
Treated silica	Trade Secret	Die Attach	0.026	0.011	262		<i></i>	Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.026	0.011	262	0.55	(mg) Total	Die Attach	% of Total Weight	1.31
Silicon	7440-21-3	Chip (Die)	7.890	3.290	78,900		Silver	7440-22-4	78.00	
Copper	7440-50-8	Wire Bond Copper Palladium coated (CuPd)	0.776	0.324	7,762		Acrylate resins Proprietary	Trade Secret	18.00	
Palladium	7440-05-3	Wire Bond Copper Palladium coated (CuPd)	0.014	0.006	138		Treated silica	Trade Secret	2.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	1.230	29,500	ł	leterocyclic organic compou	Trade Secret	2.00	
		q Total Mass	100.000	41.700	1,000,000	3.29	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	
scetive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data.	S Recast Direc	tive) and with	EO		Doped Silicon	7440-21-3 Total	100 100.00	
		in intentional ingredient in the semiconductor device and,	to the best of							
		ble reason to believe that the unavoidable impurity concen- -wide.				0.33	(mg) Total	Wire Bond Copper Palladium coated (CuPd)	% of Total Weight	0.79
y, is not below the threshold of regulatory concern for an Iding compounds used by Microchip meet the UL94 V0 fl	ny regulatory scheme world lammability standard for pl	-wide.	ntration of the o	chemical subs		0.33	(mg) Total Copper	Copper Palladium	% of Total Weight 98	0.79
by, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl ttp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is ship ertain "reels" may be made from PVC plastic.	ny regulatory scheme world lammability standard for pl als/plastics/	-wide. astics. You can access the UL iQTM family of databases to	ntration of the o	chemical subs	stance, if	0.33		Copper Palladium coated (CuPd) 7440-50-8 7440-05-3	98	0.79
ny, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl ttp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is ship pratain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information leir original packing materials is true and correct to the be sompleteness and accuracy of data in this form because it h formation is often protected from disclosure as trade secr rovided only as estimates of the average weight of these p dopants, metals, and non-metal materials contained with	y regulatory scheme world lammability standard for pl las/plastics/ oped are made from polyvin on in this form concerning s ist of its knowledge and bel has been compiled based o rets and some information oparts and the average weigh in silicon devices (silicon h	-wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a nt of anticipated significant toxic metals components. The C) in the finished parts.	ntration of the d o obtain a test old the packing ncorporated's s ly Incorporated ided by raw m and raw materi se estimates d	chemical subs report at slip on the ou emiconducto cannot guara aterial suppli al suppliers. Ir o not include	stance, if uter box and r devices in antee the res. Supplier nformation is trace levels	0.33	Copper	Copper Palladium coated (CuPd) 7440-50-8 7440-05-3 Total	98	0.79
y, is not below the threshold of regulatory concern for an obling compounds used by Microchip meet the UL94 V0 fl tp://ul.com/global/eng/pages/offerings/industries/chemica ee protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information eir original packing materials is true and correct to the best mpleteness and accuracy of data in this form because it h formation is often protected from disclosure as trade secr ovided only as estimates of the average weight of these p dopants, metals, and non-metal materials contained withi crochip Technology Incorporated does not provide any w arrantices provided by Microchip Technology Incorporated totations, sales order acknowledgement, and invoices.	ny regulatory scheme world lammability standard for pl als/plastics/ oped are made from polyvin on in this form concerning s sto of its knowledge and bel has been compiled based o rets and some information parts and the average weigh in silicon devices (silicon li varranty, express or implied and its subsidiaries are co	wide. astics. You can access the UL iQTM family of databases to you chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In ite, as of the date listed in this form. Microchip Technolog in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a at of anticipated significant toxic metals components. The C) in the finished parts. 4, with respect to the information provided in this declaration interiand in Microchip's standard terms and conditions of s	ntration of the d o obtain a test old the packing accorporated's s ly Incorporated rided by raw m and raw materi- se estimates d ion. The exclus sale. These are	chemical subs report at slip on the ou cannot guara aterial suppliers. Ir o not include sive, limited pi provided in N	iter box and r devices in intee the ers. Supplier formation is trace levels roduct licrochip's	1.23	Copper	Copper Palladium coated (CuPd) 7440-50-8 7440-05-3	98	2.95
y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information ir original packing materials is true and correct to the be mpleteness and accuracy of data in this form because it for ormation is often protected from disclosure as trade secr voided only as estimates of the average weight of these p dopants, metals, and non-metal materials contained within crochip Technology Incorporated does not provide any w urranties provided by Microchip Technology Incorporated otations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or cerwise, suffered by users or third parties as a result of th	y regulatory scheme world lammability standard for pl als/plastics/ oped are made from polyvin on in this form concerning s stof its knowledge and bel has been compiled based o rets and some information arts and the average weigh in silicon devices (silicon lu varranty, express or implied l and its subsidiaries are co changes to Material Conten he users' reliance on the inf	-wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lef, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts.	ntration of the d o obtain a test old the packing ncorporated's s y Incorporated vided by raw m and raw materi- se estimates d ion. The exclus sale. These are rect or indirect,	chemical subs report at slip on the ou cannot guara aterial suppliers al suppliers o not include sive, limited pi provided in N consequentia	itance, if uter box and r devices in untee the irs. Supplier iformation is trace levels roduct licrochip's al or		Copper Palladium	Copper Palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	98 2 100.00 % of Total Weight	
y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl tp://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information eir original packing materials is true and correct to the be mpleteness and accuracy of data in this form because it I formation is often protected from disclosure as trade secr ovided only as estimates of the average weight of these p dopants, metals, and non-metal materials contained within crochip Technology Incorporated does not provide any w arranties provided by Microchip Technology Incorporated totations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or or	y regulatory scheme world lammability standard for pl als/plastics/ oped are made from polyvin on in this form concerning s stof its knowledge and bel has been compiled based o rets and some information arts and the average weigh in silicon devices (silicon lu varranty, express or implied l and its subsidiaries are co changes to Material Conten he users' reliance on the inf	-wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technolog in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts. 4, with respect to the information provided in this declarat intained in Microchip's standard terms and conditions of s t Declarations and shall not be liable for any damages, dir	ntration of the d o obtain a test old the packing ncorporated's s y Incorporated vided by raw m and raw materi- se estimates d ion. The exclus sale. These are rect or indirect,	chemical subs report at slip on the ou cannot guara aterial suppliers al suppliers o not include sive, limited pi provided in N consequentia	itance, if uter box and r devices in untee the irs. Supplier iformation is trace levels roduct licrochip's al or		Copper Palladium (mg) Total	Copper Palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	98 2 100.00 % of Total Weight	

Semiconductor Device		amm (IIK)		nation Base / opper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Markir and/or Pkg. Labeling e3
		"Contained In"	% Total	1						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	15.57	(mg) Total	Mold Compound	% ot Total Weight	28.62
Silica, fused	60676-86-0	Mold Compound	25.758	14.012	257,580		Silica, fused	60676-86-0	90.0000	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.388	0.755	13,881		Epoxy Resin (NLP # 500-0	Trade Secret	4.8500	
Phenolic Resin	Trade Secret	Mold Compound	1.388	0.755	13,881		Phenolic Resin	Trade Secret	4.8500	
Carbon Black	1333-86-4	Mold Compound	0.086	0.047	859		Carbon Black	1333-86-4	0.3000	
Copper	7440-50-8	Lead Frame	62.166	33.818	621,663		-	Total	100.00	
Iron	7439-89-6	Lead Frame	1.529	0.832	15,291	35.40	(mg) Total	Lead Frame	% of Total Weight	65.07
Silver	7440-22-4	Lead Frame	1.240	0.674	12,396		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.081	0.044	813		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.054	0.029	537		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.368	0.200	3,675		Zinc	7440-66-6	0.13	
Epoxy resin	68475-94-5	Die Attach	0.103	0.056	1,029		Phosphorous	7723-14-0	0.08	
Copper(II) oxide	1317-38-0	Die Attach	0.020	0.011	196			Total	100.00	
Silicon	7440-21-3	Chip (Die)	2.410	1.311	24,100	0.27	(mg) Total	Die Attach	% of Total Weight	0.49
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.648	0.353	6,485		Silver	7440-22-4	75.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.012	0.006	116		Epoxy resin	68475-94-5	21.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.750	1.496	27,500		Copper(II) oxide	1317-38-0	4.00	
		TOTALS:	100.000	54,400	1.000.000			Total	100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Direc	ctive) and with	i EU	1.31	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight 100	2.41
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d	comply with EU Directive 2 via internal design contro hemical substance is NOT locument, there is no credi	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	to the best of	Microchip Te	chnology	0.36			100	0.66
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 f	comply with EU Directive 2 via internal design contro hemical substance is NOT locument, there is no credi y regulatory scheme work lammability standard for p	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	to the best of tration of the	Microchip Te chemical sub	chnology		Doped Silicon	7440-21-3 Total Wire Bond Copper palladium	100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this d , is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 f c://ul.com/global/eng/pages/offerings/industries/chemica	comply with EU Directive 2 I via internal design contro hemical substance is NOT locument, there is no credi ny regulatory scheme work 'lammability standard for p als/plastics/	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide.	to the best of tration of the obtain a test	Microchip Te chemical sub	chnology stance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 f J/ul.com/global/eng/pages/offerings/industries/chemicz protective "tubes" in which the specific product is ship iain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatio ir original packing materials is true and correct to the be upleteness and accuracy of data in this form because it i rmation is often protected from disclosure as trade sec	comply with EU Directive 2 via internal design contro hemical substance is NOT locument, there is no credi ny regulatory scheme work lammability standard for p als/plastics/ sped are made from polyvi on in this form concerning has been compiled based rets and some information arts and the average weig	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH3 is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	to the best of tration of the obtain a test d the packing corporated's y Incorporate ided by raw m of raw materi	Microchip Techemical sub: report at g slip on the o semiconducto d cannot guar- naterial suppli-	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is		(mg) Total	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8	100 100.00 % of Total Weight 98 2	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). hpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information or original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any w ranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices.	comply with EU Directive 2 I via internal design contro hemical substance is NOT locument, there is no credi ny regulatory scheme work lammability standard for p als/plastics/ opped are made from polyvi on in this form concerning ust of its knowledge and be has been compiled based has been compiled based in silicon devices (silicon warranty, express or implie I and its subsidiaries are compiled and and and and and and and and and and	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. Thes (C) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s	to the best of tration of the obtain a test d the packing corporated's : / Incorporated dided by raw m and raw materi e estimates d on. The exclu ale. These are	Microchip Te chemical sub- report at g slip on the o semiconducto d cannot guar- naterial suppli ial suppliers. I so not include sive, limited p a provided in M	chnology stance, if uter box and or devices in antee the ers. Supplier information is trace levels roduct <i>hicrochip's</i>		(mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). hpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. orbip Technology Incorporated believes the information or original packing materials is true and correct to the be pleteness and accuracy of data in this form because it irmation is often protected from disclosure as trade sec opants, metals, and non-metal materials contained with oochip Technology Incorporated does not provide any v ranties provided by Microchip Technology Incorporated attoins, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or	comply with EU Directive 2 via internal design contro hemical substance is NOT locument, there is no credi ny regulatory scheme work 'lammability standard for p als/plastics/ opped are made from polyvi opped are made from polyvi pats of its knowledge and be has been compiled based rets and some information arts and the average weig hin silicon devices (silicon warranty, express or implie d and its subsidiaries are co changes to Material Conte he users' reliance on the ir	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts.	to the best of tration of the obtain a test d the packing (corporated's : y Incorporated ded by raw m nd raw materi e estimates d on. The exclu ale. These are esct or indirect	Microchip Te chemical sub- report at g slip on the o semiconducto d cannot guar- naterial suppliers. I so not include sive, limited p s provided in M	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct dicrochip's al or	0.36	(mg) Total (mg) Total (mg) Total	7440-21-3 Total Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 98 2 100.00	0.66

Semiconductor Device	e Type: 20 QFN 4x4x0.9mr	n (G4)		nation Base / pper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Iotal			22.32	(mg) Total	Mold Compound	% ot Total Weight	
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	22.02			3	51.75
Silica, fused	60676-86-0	Mold Compound	46.611	20.089	466,110		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	2.512	1.083	25,118		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin Carbon Black	Trade Secret 1333-86-4	Mold Compound Mold Compound	2.512 0.155	1.083 0.067	25,118 1,554		Phenolic Resin	Trade Secret	4.85	
Carbon Black	7440-50-8	Lead Frame	35,702	15.388	357.024		Carbon Black	1333-86-4 Total	0.30	1
Iron	7439-89-6	Lead Frame	0.878	0.379	8,782	40.44	(
Silver	7439-89-6	Lead Frame	0.878	0.379		16.11	(mg) Total	Lead Frame	% of Total Weight	37.37
Zinc	7440-22-4 7440-66-6	Lead Frame	0.712	0.307	7,119 467		Copper	7440-50-8 7439-89-6	95.54 2.35	
Phosphorous	7440-66-6	Lead Frame	0.047	0.020	308		Silver	7439-89-6 7440-22-4	2.35	
Silver	7440-22-4	Die Attach	1.053	0.454	10.530		Zinc	7440-22-4 7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.243	0.454	2,430		Phosphorous	7723-14-0	0.13	
Treated silica	Trade Secret	Die Attach	0.243	0.012	2,430		Phospholous	Total	100.00	1
Heterocyclic organic compound	Trade Secret	Die Attach	0.027	0.012	270	0.58	(mg) Total	Die Attach	% of Total Weight	1.35
Silicon	7440-21-3	Chip (Die)	4.410	1.901	44.100	0.58	(mg) Total Silver	7440-22-4	78.00	1.35
Copper	7440-21-3	Wire Bond Copper Palladium coated (CuPd)	0.629	0.271	6.288		Acrylate resins Proprietary	Trade Secret	18.00	
Palladium	7440-30-8	Wire Bond Copper Palladium coated (CuPd)	0.029	0.271	112		Treated silica	Trade Secret	2.00	
Tin		ting on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.440	1.914	44,400		Heterocyclic organic compou	Trade Secret	2.00	
1111	7440-31-5 Pla	TOTALS:	100.000	43.100	1,000,000		neterocyclic organic compot	Total	2.00	1
	0.0404		100.000	43.100	1,000,000	1.90	Total (mg)	Chip (Die)	% of Total Weight	
		Total Mass				1.90	rotal (Ilig)	Chip (Die)	% OF TOTAL Weight	4.41
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	5 Recast Direc	tive) and with	EU		Doped Silicon	7440-21-3	100	
npliance with the above EU Directives has been verified		supplier declarations, and /or analytical test data.								3
								Total	100.00	
prporated's knowledge and belief as of the date of this d , is not below the threshold of regulatory concern for an	document, there is no credible ny regulatory scheme world-w	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concen ide.	tration of the	chemical sub		0.28	(mg) Total	Total Wire Bond Copper Palladium coated (CuPd)	100.00 % of Total Weight	
prporated's knowledge and belief as of the date of this d , is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 f	document, there is no credible ny regulatory scheme world-w flammability standard for plase	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concen ide.	tration of the	chemical sub		0.28	(mg) Total Copper	Wire Bond Copper Palladium		
chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this d i, is not below the threshold of regulatory concern for an Iding compounds used by Microchip meet the UL94 V0 f J/ul.com/global/eng/pages/offerings/industries/chemicz protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic.	document, there is no credible ny regulatory scheme world-w flammability standard for plast als/plastics/	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concen ide. tics. You can access the UL iQTM family of databases to	tration of the obtain a test	chemical sub	stance, if	0.28		Wire Bond Copper Palladium coated (CuPd)	% of Total Weight	
orporated's knowledge and belief as of the date of this d i, is not below the threshold of regulatory concern for ar Iding compounds used by Microchip meet the UL94 V0 f 3/Jul.com/global/eng/pages/offerings/industries/chemicz protective "tubes" in which the specific product is ship	document, there is no credible ny regulatory scheme world-w flammability standard for plast als/plastics/ pped are made from polyvinyl on in this form concerning sub est of its knowledge and belief has been compiled based on 1 crets and some information ma parts and the average weight of	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concen- ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho estances restricted by RoHS in Microchip Technology In , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	tration of the obtain a test Id the packing corporated's : y Incorporated ided by raw m nd raw materi	chemical sub report at y slip on the o semiconducto d cannot guar aterial suppli al suppliers. I	stance, if uter box and or devices in antee the ers. Supplier nformation is	0.28	Copper	Wire Bond Copper Palladium coated (CuPd) 7440-50-8	% of Total Weight 98	0.64
orporated's knowledge and belief as of the date of this d i, is not below the threshold of regulatory concern for an Iding compounds used by Microchip meet the UL94 V0 f of/ul.com/global/eng/pages/offerings/industries/chemicz e protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatio ir original packing materials is true and correct to the be npleteness and accuracy of data in this form because it irrmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these p dopants, metals, and non-metal materials contained with erochip Technology Incorporated does not provide any w ranties provided by Microchip Technology Incorporated otations, sales order acknowledgement, and invoices.	document, there is no credible ny regulatory scheme world-w flammability standard for plasi als/plastics/ pped are made from polyvinyl on in this form concerning sub est of its knowledge and belief has been compiled based on 1 crets and some information ma parts and the average weight c hin silicon devices (silicon IC) warranty, express or implied, v d and its subsidiaries are contr	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concen- ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho estances restricted by RoHS in Microchip Technology In , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov y not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarati ained in Microchip's standard terms and conditions of s	tration of the o obtain a test ld the packing corporated's a y incorporated ided by raw m af raw materi se estimates d on. The exclu ale. These are	chemical sub report at g slip on the o semiconducto d cannot guar aterial suppliers. I lo not include sive, limited p	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels product Microchip's	0.28	Copper	Wire Bond Copper Palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 98 2	0.64
orporated's knowledge and belief as of the date of this d , is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatio ir original packing materials is true and correct to the be pleteness and accuracy of data in this form because it ormation is often protected from disclosure as trade sec vided only as estimates of the average weight of these p lopants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any w ranties provided by Microchip Technology Incorporated	document, there is no credible ny regulatory scheme world-w flammability standard for plast als/plastics/ pped are made from polyvinyl ped are made from polyvinyl on in this form concerning sub set of its knowledge and belief has been compiled based on 1 crets and some information ma parts and the average weight of in silicon devices (silicon IC) warranty, express or implied, v d and its subsidiaries are contra changes to Material Content E the users' reliance on the infor	intertional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concen- ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho estances restricted by RoHS in Microchip Technology In , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov y not have been provided by subcontract assemblers a of anticipated significant toxic metals components. These in the finished parts. with respect to the information provided in this declarati ained in Microchip's standard terms and conditions of s Declarations and shall not be liable for any damages, dir	tration of the o obtain a test Id the packing corporated's : y Incorporated ided by raw m and raw materi se estimates d on. The exclu ale. These are ect or indirect	chemical sub report at g slip on the o semiconducto d cannot guar aterial suppli al suppliers. I lo not include sive, limited p provided in f , consequenti	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels vroduct dicrochip's al or		Copper Palladium	Wire Bond Copper Palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	% of Total Weight 98 2 100.00 % of Total Weight 100.00	4.44
rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because it irmation is often protected from disclosure as trade sec rided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any v anties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or rwise, suffered by users or third parties as a result of the	document, there is no credible ny regulatory scheme world-w flammability standard for plast als/plastics/ pped are made from polyvinyl ped are made from polyvinyl on in this form concerning sub set of its knowledge and belief has been compiled based on 1 crets and some information ma parts and the average weight of in silicon devices (silicon IC) warranty, express or implied, v d and its subsidiaries are contra changes to Material Content E the users' reliance on the infor	intertional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concen- ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho estances restricted by RoHS in Microchip Technology In , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov y not have been provided by subcontract assemblers a of anticipated significant toxic metals components. These in the finished parts. with respect to the information provided in this declarati ained in Microchip's standard terms and conditions of s Declarations and shall not be liable for any damages, dir	tration of the o obtain a test Id the packing corporated's : y Incorporated ided by raw m and raw materi se estimates d on. The exclu ale. These are ect or indirect	chemical sub report at g slip on the o semiconducto d cannot guar aterial suppli al suppliers. I lo not include sive, limited p provided in f , consequenti	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels vroduct dicrochip's al or		Copper Palladium (mg) Total	Wire Bond Copper Palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 98 2 100.00 % of Total Weight	4.44

Semiconductor Device	e Type: MQ 20 (Lead) Q	FN 5x5x0.9mm (P8)	-	nation Base A pper Alloy (C				ogeneous Materials: a.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% lotal Weight	mg/part	ppm	35.52	(mg) Total	Mold Compound	% ot Total Weight	52.91
Silica, fused	60676-86-0	Mold Compound	47.619	01			Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound Mold Compound	2,566	31.967 1.723	476,190 25.661	Enov	V Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.566	1.723	25,661	Epox	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.159	0.107	1.587		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	35.362	23.738	353.616		Carbon Black	Total	100.00	-
Tin	7440-30-0	Lead Frame	0.091	0.061	908	24.37	(mg) Total	Lead Frame	% of Total Weight	36.3
	1110010	Loud Frame	0.001	0.001	000	24.01	(ing) rotai	Lead I faile	70 OF FOLD WEIGHT	50.5
Silver	7440-22-4	Lead Frame	0.692	0.464	6,915		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.065	0.044	653		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.091	0.061	908		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.412	0.948	14.118		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.326	0.219	3,258		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.036	0.024	362			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.036	0.024	362	1.22	(mg) Total	Die Attach	% of Total Weight	1.81
Silicon	7440-21-3	Chip (Die)	4.160	2.793	41.600	1.22	Silver	7440-22-4	78	1.01
Gold	7440-57-5	Wire Bond	0.540	0.363	5,400		Acrylate resins Proprietary	Trade Secret	18	
Tin		ting on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	2.873	42.800		Treated silica	Trade Secret	2	
101	7440-51-5 Flat	TOTALS:	100.000	67.130	1.000.000	Hote	rocyclic organic compound	Trade Secret	2	
	0.06713 g		100.000	07.150	1,000,000	пеце	rocyclic organic compound	Total	2 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			15 Recast Direc	ctive) and with	EU	2.79	Total (mg)	Chip (Die)	% of Total Weight	4.16
pliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d	l via internal design controls, s hemical substance is NOT an in locument, there is no credible	upplier declarations, and /or analytical test data. ntentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concer	, to the best of	Microchip Teo	hnology	2.79	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	4.16
ppliance with the above EU Directives has been verified	I via internal design controls, s hemical substance is NOT an in locument, there is no credible ny regulatory scheme world-wi ilammability standard for plast	upplier declarations, and /or analytical test data. ntentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity conce de.	, to the best of ntration of the	Microchip Teo chemical subs	hnology	0.36		7440-21-3	100	4.16 0.54
pliance with the above EU Directives has been verified chemical substance is absent from the list above, the ci rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f	I via internal design controls, s hemical substance is NOT an in locument, there is no credible ny regulatory scheme world-wi 'lammability standard for plast als/plastics/	upplier declarations, and /or analytical test data. ntentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity conce de. ics. You can access the UL iQTM family of databases t	, to the best of ntration of the o obtain a test	Microchip Tec chemical subs report at	hnology tance, if		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the ci rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	I via internal design controls, s hemical substance is NOT an in locument, there is no credible ny regulatory scheme world-wi 'lammability standard for plast als/plastics/ oped are made from polyvinyl of on in this form concerning sub- test of its knowledge and belief, has been compiled based on ti rets and some information ma parts and the average weight o	upplier declarations, and /or analytical test data. ntentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concer de. ics. You can access the UL iQTM family of databases t chloride (PVC) plastic. "Window envelopes" used to he stances restricted by RoHS in Microchip Technology II as of the date listed in this form. Microchip Technology In he ranges provided in Material Safety Data Sheets prov y not have been provided by subcontract assemblers a fanticipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's : gy Incorporate vided by raw m	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara material supplie	thnology tance, if ter box and r devices in intee the rs. Supplier formation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl prorated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information or original packing materials is true and correct to the be pleteness and accuracy of data in this form because it died only as estimates of the average weight of these p	I via internal design controls, s hemical substance is NOT an in locument, there is no credible by regulatory scheme world-wi lammability standard for plast als/plastics/ opped are made from polyvingl of opped are made from polyvingl of this knowledge and belief, has been compiled based on the rets and some information ma arts and the average weight o nin silicon devices (silicon IC) i warranty, express or implied, w	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concer- de. ics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to he stances restricted by RoHS in Microchip Technology II as of the date listed in this form. Microchip Technology II as of the date listed in Material Safety Data Sheets prov- y not have been provided by subcontract assemblers is a fanticipated significant toxic metals components. The n the finished parts.	, to the best of ntration of the o obtain a test old the packing ncorporated's : yy Incorporate vided by raw m and raw materi see estimates c	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara aterial suppliers. Ir lo not include sive, limited pi	tance, if ter box and r devices in intee the rs. Supplier iformation is trace levels roduct		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f c//ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatic original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec rided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any v anties provided by Microchip Technology Incorporate	I via internal design controls, s hemical substance is NOT an in locument, there is no credible by regulatory scheme world-wi 'lammability standard for plast als/plastics/ opped are made from polyvinyl of opped are made from polyvinyl of the stor fits knowledge and belief, has been compiled based on the rets and some information ma arts and the average weight o nin silicon devices (silicon IC) i warranty, express or implied, w d and its subsidiaries are conta changes to Material Content D he users' reliance on the inforr	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concer- de. ics. You can access the UL iQTM family of databases the chloride (PVC) plastic. "Window envelopes" used to he stances restricted by RoHS in Microchip Technology in as of the date listed in this form. Microchip Technology he ranges provided in Material Safety Data Sheets pro- y not have been provided by subcontract assembles f anticipated significant toxic metals components. The n the finished parts. The respect to the information provided in this declarationed inde in Microchip's standard terms and conditions of eclarations and shall not be liable for any damages, di	, to the best of ntration of the o obtain a test old the packing ncorporated's : gy Incorporate vided by raw materi ese estimates o tion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at semiconducto d cannot guara aterial supplie al supplieral suppliers on tinclude sive, limited pi p provided in M	thnology tance, if ter box and r devices in intee the rs. Supplier iformation is trace levels roduct icrochip's al or	0.36	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100 100.00 % of Total Weight 100 100.00	0.54
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatic original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any v anties provided by Microchip Technology Incorporate ations, sales order acknowledgement, and invoices.	I via internal design controls, s hemical substance is NOT an in locument, there is no credible by regulatory scheme world-wi 'lammability standard for plast als/plastics/ opped are made from polyvinyl of opped are made from polyvinyl of the stor fits knowledge and belief, has been compiled based on the rets and some information ma arts and the average weight o nin silicon devices (silicon IC) i warranty, express or implied, w d and its subsidiaries are conta changes to Material Content D he users' reliance on the inforr	upplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concer- de. ics. You can access the UL iQTM family of databases the chloride (PVC) plastic. "Window envelopes" used to he stances restricted by RoHS in Microchip Technology in as of the date listed in this form. Microchip Technology he ranges provided in Material Safety Data Sheets pro- y not have been provided by subcontract assembles f anticipated significant toxic metals components. The n the finished parts. The respect to the information provided in this declarationed inde in Microchip's standard terms and conditions of eclarations and shall not be liable for any damages, di	, to the best of ntration of the o obtain a test old the packing ncorporated's : gy Incorporate vided by raw materi ese estimates o tion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at semiconducto d cannot guara aterial supplie al supplieral suppliers on tinclude sive, limited pi p provided in M	thnology tance, if ter box and r devices in intee the rs. Supplier iformation is trace levels roduct icrochip's al or	0.36	(mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.54

				ation Base A oper Alloy (C	-		Package Homo	ogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	ce Type: 24 QFN 4x4x0.									e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	21.51	(mg) Total	Mold Compound	% ot Total Weight	48.78
Silica, fused	60676-86-0	Mold Compound	43,902	19.361	439.020		Silica, fused	60676-86-0	90.0000	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.366	1.043	23,658		Epoxy Resin (NLP # 500-		4.8500	
Phenolic Resin	Trade Secret	Mold Compound	2.366	1.043	23,658		Phenolic Resin	Trade Secret	4.8500	
Carbon Black	1333-86-4	Mold Compound	0.146	0.065	1,463		Carbon Black	1333-86-4	0.3000	
Copper	7440-50-8	Lead Frame	36.476	16.086	364,762			Total	100.00	
Iron	7439-89-6	Lead Frame	0.897	0.396	8,972	16.84	(mg) Total	Lead Frame	% of Total Weight	38.18
Silver	7440-22-4	Lead Frame	0.727	0.321	7,273		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.048	0.021	477		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.031	0.014	315		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.930	0.410	9,300		Zinc	7440-66-6	0.13	
Epoxy resin	68475-94-5	Die Attach	0.260	0.115	2,604		Phosphorous	7723-14-0	0.08	
Copper(II) oxide	1317-38-0	Die Attach	0.050	0.022	496			Total	100.00	
Silicon	7440-21-3	Chip (Die)	6.770	2.986	67,700	0.55	(mg) Total	Die Attach	% of Total Weight	1.24
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.737	0.325	7,369		Silver	7440-22-4	75.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.013	0.006	131		Epoxy resin	68475-94-5	21.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	1.887	42,800		Copper(II) oxide	1317-38-0	4.00	
		TOTALS:	100.000	44.100	1,000,000			Total	100.00	
	0.0441	g Total Mass				2.99	Total (mg)	Chip (Die)	% of Total Weight	6.77
his semiconductor device and its homogenous materials		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	IS Recast Direc	tive) and with	EU		Doped Silicon	7440-21-3	100	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						Doped Silicon	7440-21-3	100	
compliance with the above EU Directives has been verifie	d via internal design contro	s, supplier declarations, and /or analytical test data.						Total	100.00	
	document, there is no credi	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer I-wide.				0.33	(mg) Total	Wire Bond Copper palladium	% of Total Weight	0.75
Iolding compounds used by Microchip meet the UL94 V0	flammability standard for r							coated (CuPd)	-	
		lastics. You can access the UL iQTM family of databases t	o obtain a test	report at			Copper	7440-50-8	98	
ttp://ul.com/global/eng/pages/offerings/industries/chemi he protective "tubes" in which the specific product is sh	cals/plastics/	lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho		·	uter box and		Copper	. ,	98	
ttp://ul.com/global/eng/pages/offerings/industries/chemi he protective "tubes" in which the specific product is sh ertain "reels" may be made from PVC plastic.	cals/plastics/ ipped are made from polyvi	- nyl chloride (PVC) plastic. "Window envelopes" used to ho	old the packing	slip on the o				7440-50-8 7440-05-3	2	
ttp://ul.com/global/eng/pages/offerings/industries/chemi he protective "tubes" in which the specific product is sh ertain "reels" may be made from PVC plastic. Nicrochip Technology Incorporated believes the informat heir original packing materials is true and correct to the t ompleteness and accuracy of data in this form because i nformation is often protected from disclosure as trade se rovided only as estimates of the average weight of these	cals/plastics/ ipped are made from polyvi ion in this form concerning pest of its knowledge and be it has been compiled based wcrets and some information parts and the average weig	nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	old the packing ncorporated's s gy Incorporated vided by raw m and raw materia	slip on the or semiconducto I cannot guara aterial supplie al suppliers. In	r devices in antee the ers. Supplier nformation is			7440-50-8		
ttp://ul.com/global/eng/pages/offerings/industries/chemi he protective "tubes" in which the specific product is sh ertain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informat heir original packing materials is true and correct to the to ompleteness and accuracy of data in this form because is formation is often protected from disclosure as trade se rovided only as estimates of the average weight of these of dopants, metals, and non-metal materials contained wi licrochip Technology Incorporated does not provide any raranties provided by Microchip Technology Incorporate uotations, sales order acknowledgement, and invoices.	cals/plastics/ ipped are made from polyvi ion in this form concerning best of its knowledge and be it has been compiled based crets and some information parts and the average weig thin silicon devices (silicon warranty, express or implie ad and its subsidiaries are co	nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of a	old the packing ncorporated's s y Incorporated vided by raw m and raw materi- ise estimates d tion. The exclus cale. These are	slip on the ou semiconducto I cannot guara aterial supplie al suppliers. In o not include sive, limited p provided in N	r devices in antee the ers. Supplier nformation is trace levels roduct licrochip's	1.89		7440-50-8 7440-05-3	2	4.28
ttp://ul.com/global/eng/pages/offerings/industries/chemi he protective "tubes" in which the specific product is sh ertain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informat teir original packing materials is true and correct to the I ompleteness and accuracy of data in this form because i formation is often protected from disclosure as trade se rovided only as estimates of the average weight of these f dopants, metals, and non-metal materials contained wi licrochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporate uotations, sales order acknowledgement, and invoices. licrochip disclaims any duty to notify users of updates o	cals/plastics/ ipped are made from polyvi ion in this form concerning pest of its knowledge and be it has been compiled based icrets and some information parts and the average weig thin silicon devices (silicon warranty, express or implie ed and its subsidiaries are c r changes to Material Conte the users' reliance on the ir	nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts.	old the packing ncorporated's s y Incorporated y Incorporated ided by raw m and raw materia se estimates d ison. The exclus sale. These are rect or indirect,	slip on the ou cannot guara aterial supplia al suppliers. In o not include sive, limited p provided in N , consequentia	r devices in antee the ers. Supplier nformation is trace levels roduct licrochip's al or	1.89	Palladium	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	2 100.00 % of Total Weight 100.00	4.28
tp://ul.com/global/eng/pages/offerings/industries/chemi ne protective "tubes" in which the specific product is sh rtain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informat eir original packing materials is true and correct to the I mpleteness and accuracy of data in this form because i formation is often protected from disclosure as trade se ovided only as estimates of the average weight of these dopants, metals, and non-metal materials contained wi crochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporate totations, sales order acknowledgement, and invoices. corochip disclaims any duty to notify users of updates o herwise, suffered by users or third parties as a result of	cals/plastics/ ipped are made from polyvi ion in this form concerning pest of its knowledge and be it has been compiled based icrets and some information parts and the average weig thin silicon devices (silicon warranty, express or implie ed and its subsidiaries are c r changes to Material Conte the users' reliance on the ir	nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of a nt Declarations and shall not be liable for any damages, dii	old the packing ncorporated's s y Incorporated y Incorporated ided by raw m and raw materia se estimates d ison. The exclus sale. These are rect or indirect,	slip on the ou cannot guara aterial supplia al suppliers. In o not include sive, limited p provided in N , consequentia	r devices in antee the ers. Supplier nformation is trace levels roduct licrochip's al or	1.89	Palladium (mg) Total	7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2 100.00 % of Total Weight	4.28

Semiconductor Device	e Type: 24 QFN 5x5x0	9mm (JL)		nation Base A pper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	33.85	(mg) Total	Mold Compound	% ot Total Weight	48.78
Silica, fused	60676-86-0	Mold Compound	43.902	30,468	439.020		Silica, fused	60676-86-0	90.0000	1
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.366	1.642	23.658		Epoxy Resin (NLP # 500-0	Trade Secret	4.8500	
Phenolic Resin	Trade Secret	Mold Compound	2.366	1.642	23,658		Phenolic Resin	Trade Secret	4.8500	
Carbon Black	1333-86-4	Mold Compound	0.146	0.102	1,463		Carbon Black	1333-86-4	0.3000	
Copper	7440-50-8	Lead Frame	36,476	25.314	364,762		Ourboil Black	Total	100.00	
Iron	7439-89-6	Lead Frame	0.897	0.623	8,972	26.50	(mg) Total	Lead Frame	% of Total Weight	38.18
Silver	7439-89-0		0.897	0.505		26.50				38.18
		Lead Frame			7,273		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.048	0.033	477		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.031	0.022	315		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.930	0.645	9,300		Zinc	7440-66-6	0.13	
Epoxy resin	68475-94-5	Die Attach	0.260	0.181	2,604		Phosphorous	7723-14-0	0.08	
Copper(II) oxide	1317-38-0	Die Attach	0.050	0.034	496			Total	100.00	
Silicon	7440-21-3	Chip (Die)	6.770	4.698	67,700	0.86	(mg) Total	Die Attach	% of Total Weight	1.24
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.737	0.511	7,369		Silver	7440-22-4	75.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.013	0.009	131		Epoxy resin	68475-94-5	21.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	2.970	42,800		Copper(II) oxide	1317-38-0	4.00	
		TOTALS:	100.000	69.400	1,000,000			Total	100.00	
	0.0694	g Total Mass				4.70	T (1 ()	A (A	% of Total Weight	6.77
	comply with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	Recast Direc	tive) and with	EU	-110	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total weight	0.77
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified	comply with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	Recast Direc	tive) and with	EU			,		6.77
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this c	comply with EU Directive via internal design contro hemical substance is NOT locument, there is no cred	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Ils, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concent	to the best of	Microchip Tec	chnology	0.52		7440-21-3	100	0.75
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ci porated's knowledge and belief as of the date of this c is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemica	via internal design contro via internal design contro nemical substance is NOT locument, there is no cred y regulatory scheme worl lammability standard for p als/plastics/	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS ils, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, t ible reason to believe that the unavoidable impurity concent d-wide. Jastics. You can access the UL iQTM family of databases to	to the best of ration of the obtain a test	Microchip Tec chemical subs report at	chnology stance, if		Doped Silicon	7440-21-3 Total Wire Bond Copper palladium	100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this c is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 0 ://ul.com/global/eng/pages/offerings/industries/chemica	via internal design contro via internal design contro nemical substance is NOT locument, there is no cred y regulatory scheme worl lammability standard for p als/plastics/	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Ils, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, t ible reason to believe that the unavoidable impurity concent d-wide.	to the best of ration of the obtain a test	Microchip Tec chemical subs report at	chnology stance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the ci rporated's knowledge and belief as of the date of this ci is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemicci protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec	comply with EU Directive : via internal design contro nemical substance is NOT locument, there is no cred y regulatory scheme worl lammability standard for p als/plastics/ opped are made from polyvi opped are made from polyvi en in this form concerning to f its knowledge and b has been compiled based rets and some information parts and the average weig	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, t ible reason to believe that the unavoidable impurity concent d-wide. plastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology Inc elief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi o may not have been provided by subcontract assemblers ar ht of anticipated significant toxic metals components. Thes	to the best of ration of the obtain a test d the packing corporated's s incorporated ded by raw m	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial suppliers. Ir	chnology stance, if uter box and r devices in antee the ers. Supplier formation is		Copper Copper	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8	100 100.00 % of Total Weight 98	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the ci rporated's knowledge and belief as of the date of this ci is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemic: protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. cochip Technology Incorporated believes the informatic roriginal packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec rided only as estimates of the average weight of these I opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any v ranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices.	comply with EU Directive : via internal design contro hemical substance is NOT locument, there is no cred by regulatory scheme worl lammability standard for p als/plastics/ opped are made from polyvi on in this form concerning st of its knowledge and by has been compiled based rets and some information parts and the average weig in silicon devices (silicon warranty, express or implie I and its subsidiaries are c	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, 1 ible reason to believe that the unavoidable impurity concent d-wide. Nastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology Inc elief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers ar ht of anticipated significant toxic metals components. Thes IC) in the finished parts. rd, with respect to the information provided in this declaratic ontained in Microchip's standard terms and conditions of sa	to the best of ration of the obtain a test d the packing corporated's s incorporated ded by raw m ded by raw m ateri e estimates d	Microchip Tec chemical subs report at semiconducto d cannot guara aterial suppliers. Ir o not include sive, limited pu provided in M	chnology stance, if uter box and r devices in antee the ers. Supplier iformation is trace levels roduct licrochip's		Copper Copper Palladium	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ppliance with the above EU Directives has been verified themical substance is absent from the list above, the cl is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. oochip Technology Incorporated believes the informatic original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec cided only as estimates of the average weight of these spants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any v anties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices.	comply with EU Directive : via internal design contro hemical substance is NOT locument, there is no cred ay regulatory scheme worl lammability standard for p als/plastics/ opped are made from polyvi en in this form concerning sto of its knowledge and b has been compiled based rets and some information in silicon devices (silicon warranty, express or implied and its subsidiaries are c changes to Material Conte he users' reliance on the in	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS lis, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, t ible reason to believe that the unavoidable impurity concent d-wide. olastics. You can access the UL IQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology Inc elief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers ar Int of anticipated significant toxic metals components. Thes IC) in the finished parts. rd, with respect to the information provided in this declaratic	to the best of ration of the obtain a test d the packing corporated's d Incorporated ded by raw m ad raw materi e estimates d on. The exclu- ale. These are act or indirect	Microchip Tec chemical subs report at a slip on the ou semiconductoo d cannot guara aterial supplies. Ir o not include sive, limited pr provided in M , consequentia	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct licrochip's al or	0.52	Copper Copper Palladium	7440-21-3 Total Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin /	100 100.00 % of Total Weight 98 2 100.00	0.75

Contained In* Contained In* Priority Priority <th></th> <th>ce Type: 28 QFN 5x5x0.</th> <th>9mm (P7)</th> <th></th> <th>nination Base Copper Alloy</th> <th></th> <th></th> <th>•</th> <th>nogeneous Materials: e.g. pc boards, display</th> <th>s)</th> <th>JEDEC 97 Product Markin and/or Pkg. Labeling e3</th>		ce Type: 28 QFN 5x5x0.	9mm (P7)		nination Base Copper Alloy			•	nogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
basic CAS Number Out of United in the second in the secon				% I otal	[10.75
Epony Ream Trade Secret Mold Compound 2.073 3.79 20.734 Operating Carlor Block 1333 86.4 Mold Compound 0.173 0.135 1.379 20.734 Carlor Block 1333 86.4 Mold Compound 0.172 0.186 1.333 </th <th>Basic Substance</th> <th>CAS Number</th> <th>Sub-Component</th> <th>Weight</th> <th>mg/part</th> <th>ppm</th> <th>28.43</th> <th>(mg) Total</th> <th>Mold Compound</th> <th>% ot Total Weight</th> <th>42.75</th>	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	28.43	(mg) Total	Mold Compound	% ot Total Weight	42.75
Phonoic Rean Trade Secret Mold Compound 2.073 1.378 20.74 Carbon Black. 1333-84-4 Mold Compound 0.128 0.065 1.378 20.74 Copper 7.440-50-8 Load Frame 42.248 22.086 422.489 Tode Carbon Black 30.98-44 Carbon Black 30.98-44 Carbon Black 170.89-20.98 422.489 Tode Carbon Black Carbon Black 170.89-20.98 422.489 Carbon Black 170.89-20.98 422.489 Tode Carbon Black 170.99 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>90.00</td> <td></td>										90.00	
Choop Black 1333-86-4 Mind Compound 0.128 0.085 1.283 Copper 7440-50-8 Lead France 0.2246 22.066 42.248 22.848 read france 0.108 0.072 1.014 28.84 read france 0.026 0.626 0.627 0.649 6.224 0.649 6.224 0.649 6.224 0.649 6.224 0.649 6.262 0.767 740 Lead France 0.072 740 1.649 740.945 1.649 740.945 740 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.945 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 740.947.9 7										4.85	
Copper 7440-53-6 Lead Frame 0.108 22.09 422.49 20.09 422.49 Corp Total Lead Frame 0.108 Corp										4.85	
Tin 7440-31-5 Lead Frame 0.108 0.072 1.084 28.4 (mg) Teal Lead Frame Silver 7440-56-6 Lead Frame 0.578 0.552 781 Silver 7440-56-6 Chromum 7440-56-6 Lead Frame 0.078 0.052 781 Silver 7440-56-6 Expression 7440-57-3 Lead Frame 0.078 0.072 1.084 Silver 7440-52-4 Expression 7440-57-3 Lead Frame 0.078 0.072 1.084 Silver 7440-52-4 Expression 7440-57-5 Disk Net Disk Net Disk Net 2000 7440-52-4 Silver 7440-57-5 Tin 7440-57-5 Tin 7440-57-5 Tin 7440-57-5 O.0665 g Total Mass 0.0665 g Total Mass Total 1.00.000 65.500 1.000.000 Silver 7440-57-5 Silver (Full Whichs (EU) Unerctives Notes of the add of right Silver (FoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive S.95 (mg) Teal Chepical C								Carbon Black		0.30	
Silver7440-224Lead Frame0.8260.5498.822The Coppert 7440-02-8Chromium7440-67-3Lead Frame0.0180.0721.084The SilverTrado 23-04Silver7440-24-4Die Attach1.0760.7161.0764SilverTrado 23-04Bilver7440-24-3Die Attach0.0721.084SilverTrado 24-04-73SolTrado 25-04Die Attach0.0340.2323.085Coppert 24-06-64Sol740-24-53Wire Bord1.3900.3950.92(mg) TealTim7440-31-5Particip on external leads (peo) - Mains Thi / anneaded at 150° (m 1 the 21.14432.1700Tim7440-31-5Particip on external leads (peo) - Mains Thi / anneaded at 150° (m 1 the 21.14432.1700Sector ductor devices and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive5.95(mg) TealDepoed Silicon7.440-24-3TotalSilicon7.440-24-3TotalCherical substance is abort the solicon south there also to believe that the unavoidable impurity concentration of the cherical substance, if any regulatory scheme world-wide.5.95(mg) TotalCherical substance is abort the solicon south and for plastics. You can access the UL IQTM family of databases to obtain a test report at child souther, if any regulatory scheme world-wide.0.92(mg) TotalUigit consolicit wide does and from optivity childride (PVC) plastic. "Window envelopes" used to hold the backing silpon the outer box and										100.00	
Znc 7440.66.6 Lead Frame 0.078 0.072 7.81 Chomium 7440.47.3 Lead Frame 0.108 0.072 1.084 Silver 7.440.22.4 Die Attach 0.304 0.202 3.066 Glod 7440.21.3 Cho (Die) 8.960 5.952 89.500 0.916 1.836.0 0.27 (Die) 4.836.0 1.800.0 0.202 3.036 0.202 3.036 0.21 (Die) 4.836.0 1.800.006 0.200 0.066.0 1.000.006 5.052 89.500 0.505.2 89.500 0.505.2 89.500 0.505.2 89.500 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006 5.050 1.000.006	Tin	7440-31-5	Lead Frame	0.108	0.072	1,084	28.84	(mg) Total	Lead Frame	% of Total Weight	43.37
Chromium 7440-27.3 Lead Fame 0.108 0.072 1.084 Biver 7440-22.4 Die Attach 0.304 0.202 3.036 Silicon 7440-21.3 Chip (Die) 8.960 6.952 85.000 Gold 7440-27.5 Wire Bond 1.380 0.918 13.800 0.27 (mg) Total Die Attach O.0665 Gold 7440-27.5 Wire Bond 1.380 0.918 13.800 0.27 (mg) Total Die Attach O.0665 G Total Mass Total 2.000 Silver 7440-27.4 Epox Resin Total Silver 7440-27.4 Silver TA40-31.5 Patrop on external leads (price): Mark 100.000 66.500 1.000.000 Silver 7440-21.3 Total Silver 7440-21.3 Total Silver 7440-21.3 Total Silver 7440-21.3 Total Silver Silver Silver 7440-21.3 Total Silver Silver Silver Silver Silver Silver Silver <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.826</td> <td>0.549</td> <td>8,262</td> <td></td> <td>Copper</td> <td>7440-50-8</td> <td>97.42</td> <td></td>	Silver	7440-22-4	Lead Frame	0.826	0.549	8,262		Copper	7440-50-8	97.42	
Silver 7440-22-4 Die Attach 10.76 0.716 10.784 Epoxy Resin Trade Secret Die Attach 0.3344 0.202 3.0364	Zinc	7440-66-6	Lead Frame	0.078	0.052			Tin	7440-31-5	0.25	
Epoxy Resin Tade Servet Die Atlach 0.324 0.202 3036 Chromium 7440-213 Gold 7440-21-3 Chip (Die) 8.856 5.562 88.500	Chromium							Silver		1.91	
Silicon 7440-21-3 Chip (Din) 8.950 5.952 98.9500 Total Gold 7440-57-5 Wire Bond 1.300 0.918 1.300 0.92 (m) Total Die Attach Tin 7440-31-5 Plaing on external leads (pro) - Maits Tn / avreaded at 150° (br 1 hou) 2.170 1.443 2.1700 0.92 (m) Total Die Attach Bestimated Total Total Silver 7240-23-1 Epoxy Resin Total Silver 7240-23-24 Epoxy Resin Total Epoxy Resin Total Silver 7240-23-24 Epoxy Resin Total Chip (Die) 32522 (C (End-d-Life Vehicles (ELV) Directive). 5.95 (mg) Total Chip (Die) 7440-21-3 Total Silver 7440-21-3 Total Silver 7440-21-3 Total Silver Total Silver Total Silver Silver Silver Total Silver Total Silver Total Silver Total Silver Silver Total Silver Silver Silver Silver<	Silver	7440-22-4	Die Attach	1.076	0.716			Zinc	7440-66-6	0.18	
Gold 7440-37-5 Wire Bond 1.380 0.918 1.3800 0.92 (mg) Total De Attach Tin 7440-31-5 Peugo nexternal backs (prins) Natte Tin / arreaded at 150°C (br 1/443 21700 1.453 1.453 1.453 1.453	Epoxy Resin	Trade Secret	Die Attach	0.304	0.202	3,036		Chromium	7440-47-3	0.25	
Tim Tim Telling on external leads (pm) - Matte Tri / stressled at 1970° (tor 1 hour 2, 21700 1.443 21700 Stressled Stressled Total Total Mass Total Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive Stressled Total 2/52/EC (End-of-Life Vehicles (ELV) Directive). Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 5.95 (mg) Total Chip (Die) Zotal Mass Total Colspan="2">Semiconductor device and its homogenous materials complex to the semiconductor device and, to the best of Microchip Technology roperate's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, ot below the threshold of regulatory concern for any regulatory scheme world-wide. Total uing compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at 3/9/ULC omg(Jobade/mg/agaes/differings/muturises/deveload and belief, as of the date isted in this form. Microchip Technology Incorporated teamore usernal issupplier. Toronation is this form because it has been completed based on the ranges provided by Microchip Technology Incorporated teamore usernal issupplier. Information is of the average weight of these parts and	Silicon	7440-21-3	Chip (Die)	8.950	5.952	89,500			Total	100.00	
0.0665 g Total Mass TOTALS: 100.000 66.500 1,000,000 Eposy Resin Trade Secret 2/53/EC (End-of-Life Vehicles (ELV) Directive). 0.0665 g Total Mass Total 2/53/EC (End-of-Life Vehicles (ELV) Directive). 0.0665 g Total Mass Chip (Die) 2/53/EC (End-of-Life Vehicles (ELV) Directive). 0.0665 g Total Mass Chip (Die) 2/53/EC (End-of-Life Vehicles (ELV) Directive). 0.0665 g Total Mass 5.95 (mg) Total Chip (Die) 2/53/EC (End-of-Life Vehicles (ELV) Directive). 0.0665 g Total Mass 5.95 (mg) Total Chip (Die) 0.1000/000 (Web the thread on the above the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Total 0.1000/000 (Web the threshold of regulatory concent for any regulatory scheme world-wide. 0.92 (mg) Total Wire Bond 0.92 (mg) Total Wire Bond 0.92 (mg) Total Gold 7440-27-5 0.0100 (Web Sincor for any regulatory scheme world-wide. Total Step Zats Show provide Sincor for any regulatory scheme world-wide. 0.92 (mg) Total Gold 7440-27-5 0.1010 (Wibe Sincor for any regulatory scheme world-wide. Sincor for provide sincor for any regulatory scheme world-wide. 0.92 (mg) Total Gold 7440-27-5	Gold	7440-57-5	Wire Bond	1.380	0.918	13,800	0.92	(mg) Total	Die Attach	% of Total Weight	1.38
Outcome Totals: Totals: Total: Tota:: Tota:: Tota:: <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>2 170</td> <td>1 443</td> <td>21 700</td> <td></td> <td>Silver</td> <td>7440-22-4</td> <td>78.00</td> <td></td>	Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2 170	1 443	21 700		Silver	7440-22-4	78.00	
0.0665 g Total Mass Total is semiconductor device and its homogenous materials comply with EU Directive 20295/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 5.95 (mg) Total Chip (Die) Joped Silicon 7440-21-3 Total Opped Silicon 7440-21-3 Total Opped Silicon 7440-21-3 Total Total Opped Silicon 7440-21-3 Total Total Opped Silicon 7440-21-3 Total Total Opped Silicon 7440-21-3 Total Total Opped Silicon 7440-21-3 Total Total Opped Silicon 7440-21-3 Total Total Opped Silicon 7440-21-3 Total Total Opped Silicon 7440-21-3 Total Total Opped Silicon 7440-21-3 Total Opped Silicon 7440-21-3 Total Total Opped Silicon 7440-21-3 Silicon Total Total Total Opped Silicon 7440-21-3 Silicon Total Total Total Opped Silicon Total		1110 01 0								22.00	
CodeS g Fund mass semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 5.95 (mg) Total Chip (Die) 2/53/EC (End-of-Life Vehicles (ELV) Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 5.95 (mg) Total Chip (Die)						.,,		Epoxy Room		100.00	
propried's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, of below the threshold of regulatory concern for any regulatory scheme world-wide.	LOUID (LING OF LINE VEHICIES (LLV) DIROUTVE).					n EU Directive	5.95	(mg) Total	Chip (Die)	% of Total Weight	8.95
protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and ain "reels" may be made from PVC plastic. Gold Gold Total Gold Gold Total Gold Gold Total	npliance with the above EU Directives has been verified	Ū			·		5.95	-	7440-21-3	% of Total Weight 100 100.00	8.95
rochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in roriginal packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the pleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier rmation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is vided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels opants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Trochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. Trochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or mire y test reports (SGS) or Tin 7440-31-5	npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this ot below the threshold of regulatory concern for any re ding compounds used by Microchip meet the UL94 V0	chemical substance is NOT ar document, there is no credibl gulatory scheme world-wide flammability standard for pla	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer	to the best o tration of the	f Microchip Te chemical sub	echnology		Doped Silicon	7440-21-3 Total	100	8.95
leads (pins) - Matter Tin / annealed at 150°C for 1 hour herwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5	mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the c oroporated's knowledge and belief as of the date of this or below the threshold of regulatory concern for any re lding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is ship	chemical substance is NOT ar document, there is no credibl gulatory scheme world-wide flammability standard for pla rals/plastics/	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer stics. You can access the UL iQTM family of databases to	to the best o tration of the o obtain a tes	f Microchip Te chemical sub t report at	echnology sstance, if any,		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
herwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5	a chemical substance is absent from the list above, the c corporated's knowledge and belief as of the date of this c not below the threshold of regulatory concern for any re olding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatik eir original packing materials is true and correct to the b mpleteness and accuracy of data in this form because it formation is often protected from disclosure as trade sec ovided only as estimates of the average weight of these	themical substance is NOT ar document, there is no credibi gulatory scheme world-wide flammability standard for pla als/plastics/ pped are made from polyviny on in this form concerning su est of its knowledge and beli has been compiled based or crets and some information n parts and the average weight	In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer- stics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ef, as of the date listed in this form. Microchip Technolog n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to f anticipated significant toxic metals components. The	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw r	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot gua material suppliers.	echnology sstance, if any, puter box and or devices in rantee the iers. Supplier Information is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
	a chemical substance is absent from the list above, the a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this not below the threshold of regulatory concern for any re olding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatic eir original packing materials is true and correct to the bi mpleteness and accuracy of data in this form because it formation is often protected from disclosure as trade sec ovided only as estimates of the average weight of these dopants, metals, and non-metal materials contained with crochip Technology Incorporated does not provide any fur-	themical substance is NOT ar document, there is no credibi gulatory scheme world-wide flammability standard for pla als/plastics/ pped are made from polyviny on in this form concerning su est of its knowledge and beli- has been compiled based or crets and some information n parts and the average weighh hin silicon devices (silicon IC warranty, express or implied,	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer- stics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir ef, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to f anticipated significant toxic metals components. The c) in the finished parts.	to the best o tration of the o obtain a tes ld the packin icorporated's y Incorporate ided by raw r and raw mate se estimates	f Microchip Tr o chemical sub t report at g slip on the o semiconduct ed cannot gua naterial suppliers. do not includo usive, limited	achnology ostance, if any, outer box and or devices in rantee the iers. Supplier Information is e trace levels product	0.92	Doped Silicon (mg) Total Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00	
Total	npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this of ot below the threshold of regulatory concern for any re- ding compounds used by Microchip meet the UL94 V0 o://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatik ir original packing materials is true and correct to the bh npleteness and accuracy of data in this form because it irmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these lopants, metals, and non-metal materials contained with ranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or	chemical substance is NOT ar document, there is no credibi gulatory scheme world-wide flammability standard for pla als/plastics/ pped are made from polyviny on in this form concerning su est of its knowledge and beli- has been compiled based or rets and some information n parts and the average weighh hin silicon devices (silicon IC warranty, express or implied, d and its subsidiaries are cor changes to Material Content the users' reliance on the info	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer stics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir ef, as of the date listed in this form. Microchip Technology Ir n the ranges provided in Material Safety Data Sheets prov nay not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The c) in the finished parts. with respect to the information provided in this declarat nationed in Microchip's standard terms and conditions of s	to the best o tration of the o obtain a tes ld the packin icorporated's y Incorporate ided by raw r ind raw mate se estimates ion. The exclu- iale. These ar ect or indirec	f Microchip Te chemical sub t report at g slip on the o semiconduct ed cannot gua naterial suppliers. do not includo usive, limited e provided in t, consequent	achnology ostance, if any, outer box and or devices in rantee the lers. Supplier Information Information Product Microchip's tial or	0.92	(mg) Total (mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100 100.00 % of Total Weight 100.00 100.00	1.38

MICROCHIP Semiconductor Device Type:	ML 28 (Lead) QFN 6x6 mm (M4/MM)		nation Base A pper Alloy (C			•	ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	1	"Contained In"	% Total			52.76	(mg) Total	Mold Compound	% ot Total Weight	51.93
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	52.70	,	•	•	51.55
Silica, fused Epoxy Resin (NLP # 500-033-5)	60676-86-0 Trade Secret	Mold Compound Mold Compound	46.737 2.519	47.485 2.559	467,370 25.186	F eeter	Silica, fused (NLP # 500-033-5)	60676-86-0 Trade Secret	90.00 4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.519	2.559	25,186	Epox	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.156	0.158	1,558		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	37.885	38.491	378.847		Carbon Black	Total	100.00	4
Tin	7440-31-5	Lead Frame	0.097	0.099	972	39.51	(mg) Total	Lead Frame	% of Total Weight	38.89
Silver	7440-22-4	Lead Frame	0.741	0.753	7,409		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.070	0.071	700		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.097	0.099	972		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.413	0.420	4,134		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.095	0.097	954		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.011	0.011	106			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.011	0.011	106	0.54	(mg) Total	Die Attach	% of Total Weight	0.53
Silicon	7440-21-3	Chip (Die)	3.290	3.343	32,900		Silver	7440-22-4	78	
Gold Tin	7440-57-5 7440-31-5	Wire Bond Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.950 4.410	0.965	9,500 44,100		Acrylate resins Proprietary Treated silica	Trade Secret Trade Secret	18 2	
	7440-31-5	Plating on external leads (pins) - Matter III / annealed at 150°C for I hour TOTALS:	100.000	101.600	1,000,000	Ш.	eterocyclic organic compou	Trade Secret	2	
	0 1016	g Total Mass	100.000	101.000	1,000,000		sterocyclic organic compou	Total	100.00	
This semiconductor device and its homogenous materials comply w Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		<u> </u>	EU (RoHS Reca	ast Directive) a	and with EU	3.34	Total (mg)	Chip (Die)	% of Total Weight	
Compliance with the above EU Directives has been verified via inter	nal design contro	ls. supplier declarations, and /or analytical test da	ta.				Doped Silicon	7440-21-3	100	
•	•							Total	100.00	
If a chemical substance is absent from the list above, the chemical s Technology Incorporated's knowledge and belief as of the date of th chemical substance, if any, is not below the threshold of regulatory Molding compounds used by Microchip meet the UL94 V0 flammabil	his document, the concern for any r lity standard for p	re is no credible reason to believe that the unavoid regulatory scheme world-wide.	dable impurity	concentration	of the	0.97	(mg) Total	Wire Bond	% of Total Weight	0.95
http://ul.com/global/eng/pages/offerings/industries/chemicals/plastic The protective "tubes" in which the specific product is shipped are		nyl chloride (PVC) plastic. "Window envelopes" us	sed to hold the	packing slip o	n the outer		Doped Gold	7440-57-5	100	
box and certain "reels" may be made from PVC plastic.							Doped Cold			
Microchip Technology Incorporated believes the information in this devices in their original packing materials is true and correct to the cannot guarantee the completeness and accuracy of data in this for raw material suppliers. Supplier information is often protected from and raw material suppliers. Information is provided only as estimate components. These estimates do not include trace levels of dopants	best of its knowle m because it has disclosure as trac s of the average v	age and belief, as of the date listed in this form. M been compiled based on the ranges provided in M de secrets and some information may not have be weight of these parts and the average weight of an	licrochip Techr laterial Safety I en provided by ticipated signif	nology Incorpo Data Sheets pr subcontract a ficant toxic me	orated rovided by assemblers atals			Total	100.00	
Microchip Technology Incorporated does not provide any warranty, product warranties provided by Microchip Technology Incorporated in Microchip's quotations, sales order acknowledgement, and invoid	and its subsidiar es.	ies are contained in Microchip's standard terms a	nd conditions o	of sale. These	are provided	4.48	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.41
Microchip disclaims any duty to notify users of updates or changes otherwise, suffered by users or third parties as a result of the users (SGS) or of this Certificate of Compliance for semiconductor produc	reliance on the i						Tin	7440-31-5 Total	100.00 100.00	
								lotal	100.00	
						101.600				100.000

Semiconductor Device	e Type: ML or MM 2	8 (Lead) QFN-S 6x6mm (M2/MB)		nation Base A oper Alloy (C	-			ogeneous Materials: a.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In" Sub-Component	% Total Weight			52.77	(mg) Total	Mold Compound	% ot Total Weight	51.94
Basic Substance	CAS Number	•	•	mg/part	ppm					1
Silica, fused	60676-86-0	Mold Compound	46.746	47.494	467,460	-	Silica, fused	60676-86-0	90.00 4.85	
Epoxy Resin (NLP # 500-033-5) Phenolic Resin	Trade Secret Trade Secret	Mold Compound Mold Compound	2.519 2.519	2.559 2.559	25,191 25,191	Epox	y Resin (NLP # 500-033-5) Phenolic Resin	Trade Secret Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.156	0.158	1,558		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	37.145	37.739	371.450		Calbon black	Total	100.00	l
Iron	7439-89-6	Lead Frame	0.914	0.928	9.137	39.50	(mg) Total	Lead Frame	% of Total Weight	38.88
Silver	7440-22-4	Lead Frame	0.741	0.753	7,407	39.50	(mg) Total Copper	7440-50-8	95.54	30.00
Zinc	7440-22-4	Lead Frame	0.049	0.049	486		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.032	0.033	321		Silver	7439-89-6	1.91	
Silver	7440-22-4	Die Attach	0.391	0.397	3,911		Zinc	7440-22-4 7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.100	0.397	996			7723-14-0	0.08	
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach Die Attach	0.033	0.101	334		Phosphorous	7723-14-0 Total	0.08	l
Phenolic hardener	92-88-6	Die Attach	0.002	0.002	16	0.54	(mm) T-4-1			0.53
			0.002	0.001	42	0.54	(mg) Total	Die Attach	% of Total Weight	0.53
Butyl cellosolve acetate	112-07-2	Die Attach		0.004			Silver	7440-22-4	74	
Silicon	7440-21-3	Chip (Die)	3.290	3.343	32,900		Epoxy Resin	9003-36-5	19	
Gold	7440-57-5	Wire Bond	0.950	0.965	9,500	1	t-Butyl phenyl glycidyl ether	3101-60-8	6	
Tin	7440-31-5 Р	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.410	4.481	44,100		Phenolic hardener	92-88-6	0	
		TOTALS:	100.000	101.600	1,000,000		Butyl cellosolve acetate	112-07-2	1	
		Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH						Total	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						3.34	Total (mg)	Chip (Die)	% of Total Weight	3.29
							Doped Silicon	7440-21-3	100	
porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar	document, there is no credible ny regulatory scheme world-v		ntration of the	chemical subs			Doped Silicon	7440-21-3 Total	100 100.00	
porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica	document, there is no credibl ny regulatory scheme world-v flammability standard for plas als/plastics/	le reason to believe that the unavoidable impurity conce wide. stics. You can access the UL iQTM family of databases t	ntration of the o obtain a test	chemical subs	stance, if	0.97	Doped Silicon (mg) Total			0.95
rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemica	document, there is no credibl ny regulatory scheme world-v flammability standard for plas als/plastics/	le reason to believe that the unavoidable impurity concer wide.	ntration of the o obtain a test	chemical subs	stance, if	0.97		Total Wire Bond 7440-57-5	100.00 % of Total Weight 100	0.95
rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatio r original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec ided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any v	document, there is no credible ny regulatory scheme world- flammability standard for pla- ials/plastics/ pped are made from polyviny on in this form concerning su est of its knowledge and belie has been compiled based on rerts and some information m parts and the average weight hin silicon devices (silicon IC, warranty, express or implied,	le reason to believe that the unavoidable impurity concer wide. stics. You can access the UL iQTM family of databases t rl chloride (PVC) plastic. "Window envelopes" used to be ubstances restricted by RoHS in Microchip Technology In ef, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets pro- nay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The c) in the finished parts.	ntration of the o obtain a test old the packing ncorporated's : gy Incorporated vided by raw m and raw materi sse estimates d tion. The exclu	chemical subs report at slip on the ou semiconducto I cannot guara aterial supplie al suppliers. Ir o not include sive, limited pi	iter box and r devices in intee the ins. Supplier iformation is trace levels roduct	0.97	(mg) Total Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100.00 % of Total Weight	0.95
rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information roriginal packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec rided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any v ranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or rwise, suffered by users or third parties as a result of th	document, there is no credible ny regulatory scheme world- flammability standard for pla: als/plastics/ pped are made from polyviny on in this form concerning su est of its knowledge and belie has been compiled based on crets and some information m parts and the average weight hin silicon devices (silicon IC warranty, express or implied, d and its subsidiaries are con changes to Material Content the users' reliance on the info	le reason to believe that the unavoidable impurity concer wide. stics. You can access the UL iQTM family of databases t rl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ef, as of the date listed in this form. Microchip Technology to the ranges provided in Material Safety Data Sheets prov nay not have been provided by subcontract assemblers a to f anticipated significant toxic metals components. The c) in the finished parts.	ntration of the o obtain a test old the packing ncorporated's : yy Incorporate vided by raw m and raw materi se estimates d tion. The exclu sale. These are rect or indirect	chemical subs report at slip on the ou semiconducto I cannot guarz aterial suppliers. Ir o not include sive, limited pi provided in N , consequentia	Iter box and r devices in Intee the rs. Supplier Information is trace levels roduct licrochip's al or		(mg) Total Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100 100.00	
porated's knowledge and belief as of the date of this d s not below the threshold of regulatory concern for ar ng compounds used by Microchip meet the UL94 V0 f (ul.com/global/eng/pages/offerings/industries/chemica rotective "tubes" in which the specific product is ship n "reels" may be made from PVC plastic. chip Technology Incorporated believes the informatio original packing materials is true and correct to the be leteness and accuracy of data in this form because it nation is often protected from disclosure as trade sec ded only as estimates of the average weight of these p pants, metals, and non-metal materials contained with chip Technology Incorporated does not provide any w nites provided by Microchip Technology Incorporated tions, sales order acknowledgement, and invoices. chip disclaims any duty to notify users of updates or wise, suffered by users or third parties as a result of th	document, there is no credible ny regulatory scheme world- flammability standard for pla: als/plastics/ pped are made from polyviny on in this form concerning su est of its knowledge and belie has been compiled based on crets and some information m parts and the average weight hin silicon devices (silicon IC warranty, express or implied, d and its subsidiaries are con changes to Material Content the users' reliance on the info	le reason to believe that the unavoidable impurity concer wide. stics. You can access the UL iQTM family of databases t rl chloride (PVC) plastic. "Window envelopes" used to he ubstances restricted by RoHS in Microchip Technology In ef, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets provided ny not have been provided by subcontract assemblers at of anticipated significant toxic metals components. The i) in the finished parts. with respect to the information provided in this declarat taianed in Microchip's standard terms and conditions of a Declarations and shall not be liable for any damages, di	ntration of the o obtain a test old the packing ncorporated's : yy Incorporate vided by raw m and raw materi se estimates d tion. The exclu sale. These are rect or indirect	chemical subs report at slip on the ou semiconducto I cannot guarz aterial suppliers. Ir o not include sive, limited pi provided in N , consequentia	Iter box and r devices in Intee the rs. Supplier Information is trace levels roduct licrochip's al or		(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100 100.00 % of Total Weight	
rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. bochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec ided only as estimates of the average weight of these p oppants, metals, and non-metal materials contained with occhip Technology Incorporated does not provide any v anties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices. bochip disclaims any duty to notify users of updates or	document, there is no credible ny regulatory scheme world- flammability standard for pla: als/plastics/ pped are made from polyviny on in this form concerning su est of its knowledge and belie has been compiled based on crets and some information m parts and the average weight hin silicon devices (silicon IC warranty, express or implied, d and its subsidiaries are con changes to Material Content the users' reliance on the info	le reason to believe that the unavoidable impurity concer wide. stics. You can access the UL iQTM family of databases t rl chloride (PVC) plastic. "Window envelopes" used to he ubstances restricted by RoHS in Microchip Technology In ef, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets provided ny not have been provided by subcontract assemblers at of anticipated significant toxic metals components. The i) in the finished parts. with respect to the information provided in this declarat taianed in Microchip's standard terms and conditions of a Declarations and shall not be liable for any damages, di	ntration of the o obtain a test old the packing ncorporated's : yy Incorporate vided by raw m and raw materi se estimates d tion. The exclu sale. These are rect or indirect	chemical subs report at slip on the ou semiconducto I cannot guarz aterial suppliers. Ir o not include sive, limited pi provided in N , consequentia	Iter box and r devices in Intee the rs. Supplier Information is trace levels roduct licrochip's al or		(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100 100.00 % of Total Weight	

	e Type: EZK / MQ / F	N 32 QFN 5x5x0.9mm S8		nation Base / pper Alloy (C			Package Hom	ogeneous Materials		JEDEC 97 Product Markir and/or Pkg. Labeling e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	32.53	(mg) Total	Mold Compound	% ot Total Weight	47.98
Silica, fused	60676-86-0	Mold Compound	43,182	29.277	431.820		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	2.327	1.578	23.270		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.327	1.578	23.270		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.144	0.098	1,439		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	27.305	18.513	273,046			Total	100.00	
Iron	7439-89-6	Lead Frame	0.672	0.455	6,716	19.38	(mg) Total	Lead Frame	% of Total Weight	28.58
Silver	7440-22-4	Lead Frame	0.544	0.369	5,444	10.00	Copper	7440-50-8	95.54	20.00
Zinc	7440-66-6	Lead Frame	0.036	0.024	357		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.024	0.016	236		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	9.442	6.402	94.424		Zinc	7440-66-6	0.13	
Epoxy resin	68475-94-5	Die Attach	2.552	1.730	25,520		Phosphorous	7723-14-0	0.08	
Copper(II) oxide	1317-38-0	Die Attach	0.383	0.260	3,828			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.383	0.260	3.828	8.65	(mg) Total	Die Attach	% of Total Weight	12.76
Silicon	7440-21-3	Chip (Die)	6,780	4.597	67,800	0.05	Silver	7440-22-4	74.00	12.70
Copper	7440-21-3	Wire Bond Copper palladium coated (CuPd)	0.698	0.473	67,800		Sliver Epoxy resin	68475-94-5	20.00	
Palladium	7440-50-8	Wire Bond Copper palladium coated (CuPd) Wire Bond Copper palladium coated (CuPd)	0.098	0.473	124		Copper(II) oxide	1317-38-0	20.00	
Tin	7440-03-3	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.190	2.163	31.900		Gamma-butyrolactone	96-48-0	3.00	
111	7440-31-3			67.800			Gamma-butyrolactone			
	0.0070	TOTALS:	100.000	67.600	1,000,000			Total		
semiconductor device and its homogenous materials		g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH				4.60	Total (mg)	Chip (Die)	% of Total Weight	6.78
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	comply with EU Directive 2	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH				4.60	Total (mg) Doped Silicon		% of Total Weight	6.78
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verifier themical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this	comply with EU Directive 2 d via internal design contro chemical substance is NOT document, there is no cred	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer	S Recast Direct	ctive) and with Microchip Tee	n EU chnology	4.60 0.48		Chip (Die) 7440-21-3	% of Total Weight	0.71
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) upliance with the above EU Directives has been verified chemical substance is absent from the list above, the or prorated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0	comply with EU Directive 2 d via internal design contro chemical substance is NOT document, there is no cred document, there is no cred flammability standard for p	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer	S Recast Direct to the best of the the best of the best of the the the best of the tration of the	ctive) and with Microchip Tee chemical subs	n EU chnology		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium	% of Total Weight 100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verifier chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this , is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi	comply with EU Directive : d via internal design contro :hemical substance is NOT document, there is no cred ny regulatory scheme worl flammability standard for p :als/plastics/	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, lible reason to believe that the unavoidable impurity concer d-wide.	S Recast Direct to the best of tration of the pobtain a test	ctive) and with Microchip Tee chemical subs	n EU chnology stance, if		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98 2	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this i, is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ob://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati ir original packing materials is true and correct to the b npleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade see	comply with EU Directive : d via internal design contro chemical substance is NOT document, there is no cred ny regulatory scheme worl flammability standard for p cals/plastics/ pped are made from polyvi on in this form concerning est of its knowledge and be has been compiled based crets and some informatior parts and the average weig	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concer d-wide. Jastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Im elief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The	S Recast Direct to the best of tration of the o obtain a test Id the packing corporated's i y Incorporated ided by raw m	ctive) and with Microchip Tec chemical sub- report at g slip on the or semiconducto d cannot guara- naterial supplices. In	n EU chnology stance, if uter box and or devices in antee the ers. Supplier nformation is		(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98 2	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this si , is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 oc//ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati ir original packing materials is true and correct to the b poleteness and accuracy of data in this form because it ormation is often protected from disclosure as trade ser- vided only as estimates of the average weight of these lopants, metals, and non-metal materials contained wit rochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorporate tations, sales order acknowledgement, and invoices.	comply with EU Directive : d via internal design contro shemical substance is NOT document, there is no cred ny regulatory scheme worl flammability standard for p als/plastics/ pped are made from polyvi on in this form concerning est of its knowledge and b has been compiled based crets and some informatior parts and the average weig hin silicon devices (silicon warranty, express or implied d and its subsidiaries are c	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concer d-wide. Justics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of standard	S Recast Direct to the best of tration of the o obtain a test Id the packing corporated's of y Incorporated's y Incorporated's ided by raw m and raw materia se estimates d ion. The exclu	ctive) and with Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara taterial suppliers. In do not include sive, limited p e provided in N	n EU chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels oroduct Wicrochip's		(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98 2	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the c is not below the threshold of regulatory concern for a ting compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informati original packing materials is true and correct to the b pleteness and accuracy of data in this form because it ination is often protected from disclosure as trade see ided only as estimates of the average weight of these opants, metals, and non-metal materials contained wit ochip Technology Incorporated does not provide any antions, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or	comply with EU Directive : d via internal design contro shemical substance is NOT document, there is no cred ny regulatory scheme worl flammability standard for p als/plastics/ pped are made from polyvi on in this form concerning est of its knowledge and be has been compiled based crets and some informatior parts and the average weig hin silicon devices (silicon warranty, express or implie d and its subsidiaries are c	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concer d-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In Pilef, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts.	S Recast Direct to the best of tration of the o obtain a test ld the packing corporated's i y Incorporated ided by raw m and raw materi se estimates d ion. The exclu- sale. These are ect or indirect	ctive) and with Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara- naterial suppliers. In aterial suppliers. In to not include sive, limited p e provided in M	n EU chnology stance, if uter box and or devices in antee the ers. Supplier information is trace levels vroduct Wicrochip's ial or	0.48	(mg) Total Copper Palladium	Chip (Die) 7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00 % of Total Weight 100.00	0.71

MICROCHIP Semiconductor Devic	e Type: ML 40 (Lead) Q	EN 6x6x0.0mm (C2)		nation Base / pper Alloy (C				geneous Materials: J. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Devic	s Type: INL 40 (Lead) G	"Contained In"	% Total	1						65
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	45.49	(mg) Total	Mold Compound	% ot Total Weight	45.04
Silica, fused	60676-86-0	Mold Compound	40.536	40.941	405.360		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.184	2.206	21,844	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.184	2.206	21,844		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.135	0.136	1,351		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	46.925	47.394	469,248			Total	100.00	
Tin	7440-31-5	Lead Frame	0.120	0.122	1,204	48.65	(mg) Total	Lead Frame	% of Total Weight	48.17
Silver	7440-22-4	Lead Frame	0.918	0.927	9,176		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.087	0.088	867		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.120	0.122	1,204		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.226	0.228	2,262		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.052	0.053	522		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.006	0.006	58			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.006	0.006	58	0.29	(mg) Total	Die Attach	% of Total Weight	0.29
Silicon	7440-21-3	Chip (Die)	2.720	2.747	27,200		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.860	0.869	8,600		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 Pla	ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.920	2.949	29,200		Treated silica	Trade Secret	2	
		TOTALS:	100.000	101.000	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	
	0 1010 a	Total Mass						Total	100.00	
ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the c corporated's knowledge and belief as of the date of this	hemical substance is NOT an	intentional ingredient in the semiconductor device and,	to the best of	Microshin To	hnology		Doped Silicon	7440-21-3 Total	100 100.00	
		reason to believe that the unavoidable impurity concer.	tration of the						100.00	
y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 t tp://ul.com/global/eng/pages/offerings/industries/chemic	flammability standard for plas als/plastics/	ide. tics. You can access the UL iQTM family of databases to	o obtain a test	chemical subs	stance, if	0.87	(mg) Total	Wire Bond	% of Total Weight	0.86
y, is not below the threshold of regulatory concern for al olding compounds used by Microchip meet the UL94 V0 i tp://ul.com/global/eng/pages/offerings/industries/chemic ne protective "tubes" in which the specific product is shi prtain "reels" may be made from PVC plastic.	flammability standard for plas als/plastics/	ide. tics. You can access the UL iQTM family of databases to	o obtain a test	chemical subs	stance, if	0.87	(mg) Total Doped Gold	Wire Bond 7440-57-5		0.86
ny, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemic ne protective "tubes" in which the specific product is shij	flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sut est of its knowledge and belief has been compiled based on i crets and some information ma parts and the average weight o	ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho estances restricted by RoHS in Microchip Technology In , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	o obtain a test old the packing accorporated's a y Incorporated ided by raw m and raw materi	chemical sub- report at slip on the or semiconductor d cannot guar- aterial suppli al suppliers. Il	stance, if uter box and r devices in antee the ers. Supplier nformation is	0.87			% of Total Weight	0.86
y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 trp://ul.com/global/eng/pages/offerings/industries/chemic ne protective "tubes" in which the specific product is ship ertain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatio eir original packing materials is true and correct to the brompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade sec ovided only as estimates of the average weight of these is the section.	flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sub est of its knowledge and belief has been compiled based on crets and some information me parts and the average weight t hin silicon devices (silicon IC) warranty, express or implied, v	ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho stances restricted by RoHS in Microchip Technology In , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts.	o obtain a test old the packing incorporated's a y Incorporated rided by raw m ind raw materi se estimates d ion. The exclu	chemical sub- report at I slip on the or semiconducto d cannot guar- aterial suppli al suppliers. In o not include sive, limited p	stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct	0.87	Doped Gold	7440-57-5	% of Total Weight	0.86
ny, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 is tp://ul.com/global/eng/pages/offerings/industries/chemic ne protective "tubes" in which the specific product is ship ertain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatific eir original packing materials is true and correct to the be pompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade sec ovided only as estimates of the average weight of these i dopants, metals, and non-metal materials contained with icrochip Technology Incorporated does not provide any va arranties provided by Microchip Technology Incorporated	flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sub est of its knowledge and belief has been compiled based on i crets and some information ma parts and the average weight t hin silicon devices (silicon IC) warranty, express or implied, y d and its subsidiaries are cont changes to Material Content I the users' reliance on the infor	ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho stances restricted by RoHS in Microchip Technology In , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarati ained in Microchip's standard terms and conditions of s Declarations and shall not be liable for any damages, dir	o obtain a test old the packing icorporated's i y Incorporated ided by raw m and raw materi se estimates d ion. The exclu- iale. These are rect or indirect	chemical sub- report at slip on the or semiconducto d cannot guar- aterial suppliers. I o not include sive, limited p provided in M , consequenti	stance, if r devices in antee the ers. Supplier iformation is trace levels roduct licrochip's al or		Doped Gold	7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00	
y, is not below the threshold of regulatory concern for al iding compounds used by Microchip meet the UL94 V0 i p://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatio ir original packing materials is true and correct to the be mpleteness and accuracy of data in this form because it ormation is often protected from disclosure as trade sec voided only as estimates of the average weight of these i dopants, metals, and non-metal materials contained with crochip Technology Incorporated does not provide any v rranties provided by Microchip Technology Incorporate otations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or rerwise, suffered by users or third parties as a result of t	flammability standard for plas als/plastics/ pped are made from polyvinyl on in this form concerning sub est of its knowledge and belief has been compiled based on i crets and some information ma parts and the average weight t hin silicon devices (silicon IC) warranty, express or implied, y d and its subsidiaries are cont changes to Material Content I the users' reliance on the infor	ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho stances restricted by RoHS in Microchip Technology In , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarati ained in Microchip's standard terms and conditions of s Declarations and shall not be liable for any damages, dir	o obtain a test old the packing icorporated's i y Incorporated ided by raw m and raw materi se estimates d ion. The exclu- iale. These are rect or indirect	chemical sub- report at slip on the or semiconducto d cannot guar- aterial suppliers. I o not include sive, limited p provided in M , consequenti	stance, if r devices in antee the ers. Supplier iformation is trace levels roduct licrochip's al or		Doped Gold (mg) Total	7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight	

Semiconductor Device	e Type: ML 44 (Lead) QI			nation Base A pper Alloy (C	-		•	ogeneous Materials: 9.g. pc boards, displa		JEDEC 97 Product Markir and/or Pkg. Labeling e3
	·· · , ·································	"Contained In"	% I otal				()= ()			
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	75.12	(mg) Total	Mold Compound	% ot Total Weight	39.87
Silica, fused	60676-86-0	Mold Compound	35.883	67.604	358,830		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.934	3.643	19,337	Epoxy	/ Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	1.934	3.643	19,337		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.120	0.225	1,196		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	47.903	90.248	479,025			Total	100.00	
Iron	7439-89-6	Lead Frame	1.178	2.220	11,783	94.46	(mg) Total	Lead Frame	% of Total Weight	50.14
Silver	7440-22-4	Lead Frame	0.955	1.800	9,552		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.063	0.118	627		Iron	7439-89-6	2.35	
Phosphorous Silver	7723-14-0 7440-22-4	Lead Frame Die Attach	0.041	0.078	414 11.856		Silver Zinc	7440-22-4 7440-66-6	1.91 0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.274	0.515	2,736		Phosphorous	7440-66-6	0.08	
Treated silica	Trade Secret	Die Attach	0.274	0.515	304	.	FIUSPHOTOUS	7723-14-0 Total	0.08	1
Heterocyclic organic compound	Trade Secret	Die Attach	0.030	0.057	304	2.86	(mg) Total	Die Attach	% of Total Weight	1.52
Silicon	7440-21-3	Chip (Die)	4.280	8.064	42.800	2.80	(mg) Total Silver	7440-22-4	% of 1 otal weight 78	1.52
Gold	7440-21-3	Wire Bond	0.480	0.904	42,800		Acrvlate resins Proprietary	Trade Secret	18	
Tin		ng on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.710	6.990	37.100		Treated silica	Trade Secret	2	
1111	7440-31-5 Plat	ng on externarieads (pins) - Matte Tin / annealed at 150 C for Thour TOTALS:	100.000	188.400	1,000,000	Hotor	ocvclic organic compound	Trade Secret	2	
	0.1884 g		100.000	100.400	1,000,000	Helei	ocyclic organic compound	Total	2 100.00	1
	via internal design controls s	unlier declarations and for analytical test data	io necasi bire	tive) and with	EU	8.06	Total (mg)	Chip (Die)	% of Total Weight	4.28
bliance with the above EU Directives has been verified nemical substance is absent from the list above, the cr porated's knowledge and belief as of the date of this d	hemical substance is NOT an ir locument, there is no credible r	ntentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity concer	, to the best of	Microchip Teo	hnology	8.06	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	4.28
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ing compounds used by Microchip meet the UL94 V0 fl	hemical substance is NOT an ir locument, there is no credible in ny regulatory scheme world-win lammability standard for plasti	itentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity concer le.	, to the best of ntration of the	Microchip Teo	hnology	8.06		7440-21-3	100	4.28
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch prorated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fi chul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic.	hemical substance is NOT an ir locument, there is no credible r ny regulatory scheme world-wid lammability standard for plasti als/plastics/	ttentional ingredient in the semiconductor device and, eason to believe that the unavoidable impurity concer te. cs. You can access the UL iQTM family of databases t	, to the best of ntration of the o obtain a test	Microchip Teo chemical subs report at	thnology tance, if		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verified chemical substance is absent from the list above, the ci- rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fi ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	hemical substance is NOT an in locument, there is no credible ny regulatory scheme world-wid lammability standard for plasti als/plastics/ opped are made from polyvinyl c on in this form concerning subst st of its knowledge and belief, has been compiled based on ti rets and some information may aarts and the average weight of	tentional ingredient in the semiconductor device and, eason to believe that the unavoidable impurity concer- ie. cs. You can access the UL iQTM family of databases t hloride (PVC) plastic. "Window envelopes" used to ho stances restricted by RoHS in Microchip Technology Ir as of the date listed in this form. Microchip Technology re ranges provided in Material Safety Data Sheets pro- y not have been provided by subcontract assemblers a 'anticipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's : gy Incorporate vided by raw m and raw materi	Microchip Tec chemical subs report at selip on the ou semiconducto d cannot guara laterial supplie	thnology tance, if ter box and r devices in intee the rs. Supplier formation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
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Basic Substance Contamed in %: Otal mg/min Ppm 70.49 (mg/ cml) Mod Compound 52.8 Silica Fued 60075-86-0 Mod Compound 32.93 22.03 480.06 500.07 600.0					nation Base A pper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling
Basic SubatanceCAS NumberSub-ComponentWeightmg/gasppm7.0%(wg) (wg) (wg)Mode (mogene)% of real Warge5.2.8Sing TayledStorps 660Mode Compound455045003.0.671.00010.000	Semiconductor Device	Type: 48 QFN 7x7x0.9r									e3
Blice Pland 6007 860 Moli Compound 40.07 62.02 460.00 Brown Real Trade Secret Moli Compound 2.165 3.866 72.031 Copy Real Trade Secret Moli Compound 2.165 3.866 72.031 Copy Real 7400-554 Lead Frame 0.027 1.168 5.075 50.38 (m) Trade Secret 6.03 Non 7430-564 Lead Frame 0.027 1.168 5.075 50.38 (m) Trade Secret 50.38	Basic Substance	CAS Number			mg/part	maa	70.49	(mg) Total	Mold Compound	% ot Total Weight	52.8
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Silver 7440224 Lead Frame 0.728 0.71 7.75 No. Cope 7440263 0.954 Phiphrons 7722116 Load Frame 0.022 0.042 315 Acyle Rean Trade server Die Attach 0.056 0.042 316 Phyphone Trade server Die Attach 0.056 0.068	Copper	7440-50-8	Lead Frame	36.486	48.709	364,858				100.00	
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In prime which the book of the constraints been verified verified and using the constraints and the many local est deal of the constraints and the segment of the constraints of the chemical substance, if the constraints of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if the second of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip Technology incorporated is substance, if the second for any regulatory scheme world-wide. The second the chemical substance is a second the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at the protect for concerning substances restricted by RoHS in Microchip Technology incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology incorporated cannot guarantee the protected for moleculates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels dopants, and non-metal materials contained within sillicon devices (sillicon devices second											
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e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and train "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in fair original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the meterial suppliers. Suppliers S	corporated's knowledge and belief as of the date of this do	cument, there is no credibl	le reason to believe that the unavoidable impurity conce				1.29	(mg) Total	Copper palladium	% of Total Weight	0.97
e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in if original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the method accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. Suppliers. Suppliers suppliers suppliers suppliers suppliers suppliers suppliers are average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels dopants, metals, and non-metal materials uppliers information any not in finished parts. crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product race levels dotation divices (silicon IC) in the finished parts. crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product reactions degment, and invoices. crochip technology Incorporated and invoices. crochip technology users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or this certificate of Compliance for semiconductor products. Total 100.00	Iding compounds used by Microchip meet the UL94 V0 fla	mmability standard for pla	stics. You can access the UL iQTM family of databases t	o obtain a test	report at			Copper	7440-50-8	98	
tracking materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's semiconductor devices in pior original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's semiconductor devices in pior original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's semiconductor devices in provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product rranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's otations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or changes to Material Content Declarations (MCD) or independent third party test reports (SGS) or this Certificate of Compliance for semiconductor products. Total 100.00		ed are made from polyviny	I chloride (PVC) plastic. "Window envelopes" used to h	old the packing	slip on the o	uter box and		Palladium	7440-05-3	2	
tracting rectinition provided by licerochip Technology incorporated does not provide any warranty, express of inipied, with respect to the information provided in this dectaration. The exclusive, initiate product intratices provided by licerochip Technology incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's otations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or nerwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or this Certificate of Compliance for semiconductor products. Tin Teta 100.00	eir original packing materials is true and correct to the bes mpleteness and accuracy of data in this form because it h formation is often protected from disclosure as trade secre ovided only as estimates of the average weight of these pa	t of its knowledge and belie as been compiled based or its and some information n rts and the average weight	ef, as of the date listed in this form. Microchip Technolog t the ranges provided in Material Safety Data Sheets pro nay not have been provided by subcontract assemblers of anticipated significant toxic metals components. The	gy Incorporated vided by raw m and raw materi	l cannot guara aterial supplie al suppliers. In	antee the ers. Supplier nformation is			Total	100.00	•
herwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or this Certificate of Compliance for semiconductor products.	crochip Technology Incorporated does not provide any wa						2.03	(mg) I otal	leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.52
	arranties provided by Microchip Technology Incorporated a lotations, sales order acknowledgement, and invoices.										
	otations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or ch nerwise, suffered by users or third parties as a result of the	e users' reliance on the info						Tin			

Semiconductor Device		/0.9mm(NT)		nation Base / opper Alloy (C	-		Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	туре. 04 сеги эхэ.	"Contained In"	% Iotal							63
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	102.56	(mg) Total	Mold Compound	% ot Total Weight	44.13
Silica, vitreous	60676-86-0	Mold Compound	38,353	89.133	383.534		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	834893-60-6	Mold Compound	3,385	7.866	33,848		Epoxy Resin	834893-60-6	7.67	
Phenolic Resin	628290-34-6	Mold Compound	2.255	5.241	22,550		Phenolic Resin	628290-34-6	5.11	
Carbon Black	1333-86-4	Mold Compound	0.137	0.318	1,368		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	40.126	93.252	401,258			Total	100.00	
Iron	7439-89-6	Lead Frame	0.987	2.294	9,870	97.61	(mg) Total	Lead Frame	% of Total Weight	42
Silver	7440-22-4	Lead Frame	0.800	1.859	8,001		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.053	0.122	525		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.035	0.081	347		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.863	4.331	18,634		Zinc	7440-66-6	0.13	
Acrylic Resin	Trade secret	Die Attach	0.206	0.478	2,057		Phosphorous	7723-14-0	0.08	
Epoxy Resin	Trade secret	Die Attach	0.061	0.141	605			Total	100.00	
Acrylate	Trade secret	Die Attach	0.133	0.309	1,331	5.62	(mg) Total	Die Attach	% of Total Weight	2.42
Polybutadiene derivative & Coplolymer	Trade secret	Die Attach	0.157	0.366	1.573		Silver	7440-22-4	77	
Silicon	7440-21-3	Chip (Die)	6.000	13.944	60,000		Acrylic Resin	Trade secret	9	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.953	2.215	9,530		Epoxy Resin	Trade secret	3	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.017	0.039	170		Acrylate	Trade secret	6	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.480	10.412	44,800	Polybutadie	ne derivative & Coplolymer	Trade secret	7	
		TOTALS:	100.000	232.400	1.000.000	,		Total	100.00	
	0.0004			2021100	.,				100100	
		g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	ctive) and with	1 EU	13.94	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	6
s semiconductor device and its homogenous materials cr sctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified v	omply with EU Directive 2	0002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	ctive) and with) EU	13.94			ý	6
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified v hemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any	omply with EU Directive 2 ria internal design contro emical substance is NOT cument, there is no credi r regulatory scheme world	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide.	, to the best of htration of the	Microchip Tec chemical subs	chnology	13.94 2.25		7440-21-3	100	0.97
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified vehicles and the second seco	omply with EU Directive 2 ria internal design contro amical substance is NOT cument, there is no credi regulatory scheme work immability standard for p	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer	, to the best of htration of the	Microchip Tec chemical subs	chnology		Doped Silicon	7440-21-3 Total Wire Bond palladium coated	100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified to chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this do i, is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fla b://ul.com/global/eng/pages/offerings/industries/chemical	omply with EU Directive 2 via internal design contro amical substance is NOT cument, there is no credi regulatory scheme work ummability standard for p s/plastics/	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide.	, to the best of htration of the o obtain a test	Microchip Tec chemical subs report at	chnology stance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified v chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this do i, is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fit or//ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bes upleteness and accuracy of data in this form because it h rmation is often protected from disclosure as trade secre	omply with EU Directive 2 via internal design contro emical substance is NOT cument, there is no credi v regulatory scheme work mmability standard for p s/plastics/ wed are made from polyvi in this form concerning t of its knowledge and be as been compiled based ats and some information rits and the average weig	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ls, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer s-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	, to the best of tration of the o obtain a test old the packing ncorporated's : y Incorporate vided by raw m and raw materi	Microchip Ter chemical sub: report at g slip on the or semiconducto d cannot guara aterial suppliers. In	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is		Doped Silicon (mg) Total Copper	7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8	100 100.00 % of Total Weight 98	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified to chemical substance is absent from the list above, the chh- orporated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fla c//ul.com/global/eng/pages/offerings/industries/chemical ap rotective "tubes" in which the specific product is shipp ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bes npleteness and accuracy of data in this form because it h ormation is often protected from disclosure as trade secret vided only as estimates of the average weight of these pa lopants, metals, and non-metal materials contained withil rochip Technology Incorporated does not provide any wa	omply with EU Directive 2 via internal design contro emical substance is NOT cument, there is no credi v regulatory scheme work mmability standard for p s/plastics/ wed are made from polyvi in this form concerning t of its knowledge and be as been compiled based its and some information rits and the average weig n silicon devices (silicon arranty, express or implie	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ls, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer s-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	to the best of ntration of the o obtain a test old the packing ncorporated's a y Incorporate vided by raw m and raw materi se estimates d ion. The exclu	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guar aterial suppliers. In io not include sive, limited p	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct		Doped Silicon (mg) Total Copper Palladium (mg) Total	7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified to chemical substance is absent from the list above, the ch- proprated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 file by//ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp rain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bes ppleteness and accuracy of data in this form because it h meation is often protected from disclosure as trade secre- vided only as estimates of the average weight of these pa lopants, metals, and non-metal materials contained within rochip Technology Incorporated does not provide any war- ranties provided by Microchip Technology Incorporated stations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or ci-	amply with EU Directive 2 via internal design contro amical substance is NOT curment, there is no credi regulatory scheme work mmability standard for p s/plastics/ wed are made from polyvi in this form concerning t of its knowledge and be as been compiled based ats and some information rits and the average weig n silicon devices (silicon arranty, express or implie and its subsidiaries are co hanges to Material Conte e users' reliance on the ir	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ls, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer d-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir lief, as of the date listed in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a Ho of anticipated significant toxic metals components. The IC) in the finished parts.	to the best of htration of the o obtain a test odd the packing hcorporated's - y Incorporated's y Incorporated's y Incorporated ided by raw materiand raw materiand se estimates d ion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara tarial suppliers. I al suppliers to not include sive, limited p p provided in N	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct dicrochip's al or	2.25	Doped Silicon (mg) Total Copper Palladium (mg) Total	7440-21-3 Total palladium coated copper (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100 100.00 % of Total Weight 98 2 100.00 % of Total Weight 100.00	0.97
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified to chemical substance is absent from the list above, the chh prorated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fla //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information roriginal packing materials is true and correct to the bes upleteness and accuracy of data in this form because it h rmation is often protected from disclosure as trade secre vided only as estimates of the average weight of these pa opants, metals, and non-metal materials contained within rochip Technology Incorporated does not provide any we ranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or cir rwise, suffered by users or third parties as a result of the	amply with EU Directive 2 via internal design contro amical substance is NOT curment, there is no credi regulatory scheme work mmability standard for p s/plastics/ wed are made from polyvi in this form concerning t of its knowledge and be as been compiled based ats and some information rits and the average weig n silicon devices (silicon arranty, express or implie and its subsidiaries are co hanges to Material Conte e users' reliance on the ir	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of s ant Declarations and shall not be liable for any damages, dii	to the best of htration of the o obtain a test odd the packing hcorporated's - y Incorporated's y Incorporated's y Incorporated ided by raw materiand raw materiand se estimates d ion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara tarial suppliers. I al suppliers to not include sive, limited p p provided in N	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct dicrochip's al or	2.25	Doped Silicon (mg) Total Copper Palladium (mg) Total	7440-21-3 Total palladium coated copper (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 98 2 100.00 % of Total Weight	0.97

Semiconductor Device	Type: MR 64 (Lead) QFI	N 9x9xn9mm (R4)		nation Base A pper Alloy (C				ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Product Markir and/or Pkg. Labeling e3
		"Contained In"	% Total			10.41	(mg) Total	Mold Compound	% ot Total Weight	
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	10.41		• • • •		4.40
Silica, fused	60676-86-0	Mold Compound	4.032	9.370	40,320		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	0.217	0.505	2,173		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin Carbon Black	Trade Secret 1333-86-4	Mold Compound	0.217 0.013	0.505	2,173 134		Phenolic Resin	Trade Secret	4.85	
		Mold Compound	40.914	95.085			Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame			409,143			Total		
Tin	7440-31-5	Lead Frame	0.105	0.244	1,050	97.61	(mg) Total	Lead Frame	% of Total Weight	42
Silver	7440-22-4	Lead Frame	0.800	1.859	8,001		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.076	0.176	756		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.105	0.244	1,050		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.888	4.387	18,876		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.436	1.012	4,356		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.048	0.112	484			Total		
Heterocyclic organic compound	Trade Secret	Die Attach	0.048	0.112	484	5.62	(mg) Total	Die Attach	% of Total Weight	2.42
Silicon	7440-21-3	Chip (Die)	6.000	13.944	60,000		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.970	2.254	9,700		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	44.130	102.558	441,300		Treated silica	Trade Secret	2	
		TOTALS:	100.000	232.400	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	
	0.2324 g To	otal Mass						Total	100.00	
iance with the above EU Directives has been verified v emical substance is absent from the list above, the che orated's knowledge and belief as of the date of this do	emical substance is NOT an inte	entional ingredient in the semiconductor device and					Doped Silicon	7440-21-3 Total	100 100.00	l
s not below the threshold of regulatory concern for any ng compounds used by Microchip meet the UL94 VO fla ul.com/global/eng/pages/offerings/industries/chemicals	regulatory scheme world-wide					2.25	(mg) Total	Wire Bond	% of Total Weight	0.97
rotective "tubes" in which the specific product is shipp n "reels" may be made from PVC plastic.	ed are made from polyvinyl ch	loride (PVC) plastic. "Window envelopes" used to he	old the packing	slip on the ou	iter box and		Doped Gold	7440-57-5	100	
ochip Technology Incorporated believes the information original packing materials is true and correct to the besi pleteness and accuracy of data in this form because it hi mation is often protected from disclosure as trade secre ided only as estimates of the average weight of these pa ppants, metals, and non-metal materials contained withir pochip Technology Incorporated does not provide any wa	t of its knowledge and belief, as as been compiled based on the ets and some information may in ints and the average weight of a n silicon devices (silicon IC) in	s of the date listed in this form. Microchip Technolog ranges provided in Material Safety Data Sheets pro- not have been provided by subcontract assemblers a inticipated significant toxic metals components. The the finished parts.	gy Incorporated vided by raw m and raw materi ese estimates d	l cannot guara aterial supplie al suppliers. Ir o not include	Intee the ers. Supplier Iformation is trace levels			Total Plating on external	100.00	
anties provided by Microchip Technology Incorporated a ations, sales order acknowledgement, and invoices. bochip disclaims any duty to notify users of updates or ch rwise, suffered by users or third parties as a result of the	and its subsidiaries are contain nanges to Material Content Dec	ed in Microchip's standard terms and conditions of	sale. These are rect or indirect	provided in M	licrochip's al or	102.56	(mg) Total	leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	44.13
is Certificate of Compliance for semiconductor products		uvon ini material Content Decialations (MCD) of Indep	pendent tnira p	arry test repor	13 (303) Or	232.400	Tin	7440-31-5 Total	100.00 100.00	100

MICROCHIP Semiconductor Device	Type: 17V 132 D			nation Base / opper Alloy (C	-		Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Fighe. LZT 132 D	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	35.68	(mg) Total	Mold Compound	% ot Total Weight	34.98
Silica, vitreous (or fused)	60676-86-0	Mold Compound	29.733	30.328	297,330		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	3.043	3.104	30,433		Epoxy Resin	Trade Secret	8.70	1
Phenolic Resin	Trade Secret	Mold Compound	2.099	2.141	20,988		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.105	0.107	1,049		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	52.765	53.821	527,654			Total	100.00	
Iron	7439-89-6	Lead Frame	1.298	1.324	12,979	56.33	(mg) Total	Lead Frame	% of Total Weight	55.23
Silver	7440-22-4	Lead Frame	1.052	1.073	10,521		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.069	0.070	690		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.046	0.046	456		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.009	1.029	10,087		Zinc	7440-66-6	0.13	
Epoxy resin	68475-94-5	Die Attach	0.262	0.267	2,620		Phosphorous	7723-14-0	0.08	l
Copper(II) oxide	1317-38-0	Die Attach	0.039	0.040	393			Total	100.00	
Silicon	7440-21-3	Chip (Die)	6.120	6.242	61,200	1.34	(mg) Total	Die Attach	% of Total Weight	1.31
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.432	0.441	4,323		Silver	7440-22-4	77	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.008	0.008	77		Epoxy resin	68475-94-5	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.920	1.958	19,200		Copper(II) oxide	1317-38-0	3	<u>I</u>
		TOTALS:	100.000	102.000	1,000,000			Total	100.00	
		g Total Mass				6.24	Total (mg)	Chip (Die)	% of Total Weight	6.12
s semiconductor device and its homogenous materials o active 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Dire	ctive) and with	EU		Doped Silicon	7440-21-3	100	
								7440-21-3	100	
	via internal design contro	s supplier declarations and /or analytical test data						Total	100.00	
mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this d	nemical substance is NOT ocument, there is no credi	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen				0.45	(mg) Total			
empliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this d y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl	nemical substance is NOT locument, there is no credi ny regulatory scheme work lammability standard for p	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	tration of the	chemical subs		0.45		Total Wire Bond palladium coated	100.00	
ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this d y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl tp://ul.com/global/eng/pages/offerings/industries/chemica	nemical substance is NOT ocument, there is no credi y regulatory scheme work lammability standard for p als/plastics/	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide.	tration of the o obtain a test	chemical subs	stance, if	0.45	(mg) Total	Total Wire Bond palladium coated copper (CuPd)	100.00 % of Total Weight	
mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this d y, is not below the threshold of regulatory concern for an liding compounds used by Microchip meet the UL94 V0 fl p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic.	nemical substance is NOT ocument, there is no credi y regulatory scheme work lammability standard for p uls/plastics/ oped are made from polyvi	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent- wide. lastics. You can access the UL iQTM family of databases to hyl chloride (PVC) plastic. "Window envelopes" used to ho	tration of the o obtain a test Id the packing	chemical subs report at g slip on the o	stance, if - uter box and	0.45	(mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8	100.00 % of Total Weight 98	0.44
mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this d y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatio eir original packing materials is true and correct to the be mpleteness and accuracy of data in this form because it I ormation is often protected from disclosure as trade secr ovided only as estimates of the average weight of these p	nemical substance is NOT ocument, there is no credi by regulatory scheme work lammability standard for p lls/plastics/ oped are made from polyvi n in this form concerning st of its knowledge and be has been compiled based of rets and some information arts and the average weig	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	tration of the o obtain a test Id the packing corporated's y Incorporated ided by raw m nd raw materi	chemical sub- report at g slip on the or semiconductor d cannot guar naterial suppli	stance, if uter box and or devices in antee the ers. Supplier nformation is	0.45	(mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.44
ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this di y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl tp://ul.com/global/eng/pages/offerings/industries/chemica ne protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. In the soft of the soft of the second concerne to the be impleteness and accuracy of data in this form because it I formation is often protected from disclosure as trade seco ovided only as estimates of the average weight of these p dopants, metals, and non-metal materials contained with crochip Technology Incorporated does not provide any w	nemical substance is NOT ocument, there is no credi by regulatory scheme work lammability standard for p las/plastics/ oped are made from polyvi in in this form concerning st of its knowledge and be has been compiled based has been compiled based in silicon devices (silicon varranty, express or implie	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	tration of the o obtain a test ld the packing corporated's y Incorporated ided by raw m nd raw materi se estimates c	chemical sub report at g slip on the or semiconducto d cannot guar aterial supplie ial suppliers. In io not include sive, limited p	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct	0.45	(mg) Total Copper Palladium (mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	. 0.44
mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this d y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl tp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. Incochip Technology Incorporated believes the informatio eir original packing materials is true and correct to the be impleteness and accuracy of data in this form because it I formation is often protected from disclosure as trade sec ovided only as estimates of the average weight of these p dopants, metals, and non-metal materials contained with crochip Technology Incorporated does not provide any w arranties provided by Microchip Technology Incorporated otations, sales order acknowledgement, and invoices.	nemical substance is NOT ocument, there is no credi y regulatory scheme work lammability standard for p uls/plastics/ oped are made from polyvi n in this form concerning st of its knowledge and be has been compiled based rets and some information arts and the average weig in silicon devices (silicon varranty, express or implie and its subsidiaries are co- changes to Material Conte re users' reliance on the ir	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent- l-wide. Iastics. You can access the UL iQTM family of databases to hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. Thes C) in the finished parts.	tration of the o obtain a test ld the packing corporated's y Incorporate ided by raw mad raw materi se estimates c on. The exclu ale. These are ect or indirect	chemical sub- report at g slip on the or semiconducto d cannot guar- naterial suppliers. In a suppliers. In lo not include sive, limited p e provided in N	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct <i>Microchip's</i> al or		(mg) Total Copper Palladium (mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 98 2 100.00	. 0.44
npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch proprated's knowledge and belief as of the date of this di is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fl c//ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatio roriginal packing materials is true and correct to the be upleteness and accuracy of data in this form because it I rmation is often protected from disclosure as trade seci vided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any w ranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or or arwise, suffered by users or third parties as a result of the	nemical substance is NOT ocument, there is no credi y regulatory scheme work lammability standard for p uls/plastics/ oped are made from polyvi n in this form concerning st of its knowledge and be has been compiled based rets and some information arts and the average weig in silicon devices (silicon varranty, express or implie and its subsidiaries are co- changes to Material Conte re users' reliance on the ir	An intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent- wide. lastics. You can access the UL iQTM family of databases to hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s at Declarations and shall not be liable for any damages, dire	tration of the o obtain a test ld the packing corporated's y Incorporate ided by raw mad raw materi se estimates c on. The exclu ale. These are ect or indirect	chemical sub- report at g slip on the or semiconducto d cannot guar- naterial suppliers. In a suppliers. In lo not include sive, limited p e provided in N	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct <i>Microchip's</i> al or		(mg) Total Copper Palladium (mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 98 2 2 100.00 % of Total Weight	1.92

	vice Type: 36 SQFN 6x6x	1.0mm (UD/UE)		nation Base / pper Alloy (C			Package Hom	ogeneous Materials		JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Total					1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	65.88	(mg) Total	Mold Compound	% ot Total Weight	79.85
Silica, fused	60676-86-0	Mold Compound	71.865	59,289	718,650		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	3,873	3,195	38,727		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.873	3,195	38,727		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.240	0,198	2,396		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	9.984	8.237	99,837			Total	100.00	
Iron	7439-89-6	Lead Frame	0.246	0.203	2,456	8.62	(mg) Total	Lead Frame	% of Total Weight	10.45
Silver	7440-22-4	Lead Frame	0.199	0.164	1,991	0.02	Copper	7440-50-8	95.54	10110
Zinc	7440-66-6	Lead Frame	0.013	0.011	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.007	86		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.555	0.458	5.550		Zinc	7440-22-4	0.13	
Epoxy resin	68475-94-5	Die Attach	0.173	0.142	1,725		Phosphorous	7723-14-0	0.08	
Copper(II) oxide	1317-38-0	Die Attach	0.023	0.019	225		Filospiloious	Total	100.00	
Silicon	7440-21-3	Chip (Die)	7.500	6.188	75,000		() T ()			
						0.62	(mg) Total	Die Attach	% of Total Weight	0.75
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.197	0.162	1,965		Silver	7440-22-4	74.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.004	0.003	35		Epoxy resin	68475-94-5	23.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.031	12,500		Copper(II) oxide	1317-38-0	3.00	
		TOTALS:	100.000	82.500	1,000,000			Total	100.00	
	0.0825	g Total Mass				6.19	Total (mg)	Chip (Die)	% of Total Weight	7.5
		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	tive) and with	EU		Doped Silicon	7440-21-3	100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive										
npliance with the above EU Directives has been verif	fied via internal design contro	s, supplier declarations, and /or analytical test data.							400.00	
		-,,,,,,,,						Total	100.00	
prporated's knowledge and belief as of the date of th	is document, there is no credi	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer				0.17	(mg) Total	Total Wire Bond Copper palladium coated (CuPd)	100.00 % of Total Weight	
prorated's knowledge and belief as of the date of th , is not below the threshold of regulatory concern fo ding compounds used by Microchip meet the UL94	is document, there is no credi r any regulatory scheme work V0 flammability standard for p	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer	tration of the	chemical subs		0.17	(mg) Total Copper	Wire Bond Copper palladium		
orporated's knowledge and belief as of the date of th , is not below the threshold of regulatory concern fo Iding compounds used by Microchip meet the UL94 1 ://ul.com/global/eng/pages/offerings/industries/chem	is document, there is no credi r any regulatory scheme work V0 flammability standard for p nicals/plastics/	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer -wide.	tration of the o	chemical subs	stance, if	0.17		Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 98 2	0.2
proprieted's knowledge and belief as of the date of the is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 1 ://ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is a ain "reels" may be made from PVC plastic. rrochip Technology Incorporated believes the inform r original packing materials is true and correct to the spleteness and accuracy of data in this form becauss rmation is often protected from disclosure as trade vided only as estimates of the average weight of the	is document, there is no credi r any regulatory scheme work V0 flammability standard for p nicals/plastics/ shipped are made from polyvi ation in this form concerning : b best of its knowledge and be e it has been compiled based secrets and some information se parts and the average weig	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer -wide. astics. You can access the UL iQTM family of databases to byl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	tration of the obtain a test o obtain a test Id the packing corporated's s y Incorporated ided by raw m nd raw materi	chemical subs report at slip on the or semiconductor I cannot guara aterial supplia al suppliers. Il	stance, if uter box and or devices in antee the ers. Supplier nformation is	0.17	Copper	Wire Bond Copper palladium coated (CuPd) 7440-50-8	% of Total Weight 98	0.2
proprieted's knowledge and belief as of the date of the , is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 s://ul.com/global/eng/pages/offerings/industries/chen protective "tubes" in which the specific product is st ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the inform ir original packing materials is true and correct to the pleteness and accuracy of data in this form becaus; rmation is often protected from disclosure as trade- vided only as estimates of the average weight of the lopants, metals, and non-metal materials contained of rochip Technology Incorporated does not provide an ranties provided by Microchip Technology Incorpora- trations, sales order acknowledgement, and invoices	is document, there is no credi r any regulatory scheme work V0 flammability standard for p nicals/plastics/ shipped are made from polyvir ation in this form concerning : best of its knowledge and be e it has been compiled based i secrets and some information se parts and the average weig within silicon devices (silicon ny waranty, express or implie ated and its subsidiaries are con-	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to by chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarat intained in Microchip's standard terms and conditions of s	Itration of the o obtain a test Id the packing corporated's s y Incorporated ided by raw m and raw materi se estimates d ion. The exclus- iale. These are	chemical subs report at slip on the or semiconducto I cannot guara aterial supplic al suppliers. I o not include sive, limited p provided in N	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct dicrochip's	0.17	Copper	Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 98 2	0.2
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porated's knowledge and belief as of the date of th is not below the threshold of regulatory concern fo ing compounds used by Microchip meet the UL94 1 //ul.com/global/eng/pages/offerings/industries/chen porotective "tubes" in which the specific product is a in "reels" may be made from PVC plastic. bochip Technology Incorporated believes the inform original packing materials is true and correct to the pleteness and accuracy of data in this form because mation is often protected from disclosure as trade used only as estimates of the average weight of the upants, metals, and non-metal materials contained to bochip Technology Incorporated does not provide ar anties provided by Microchip Technology Incorpora- tations, sales order acknowledgement, and invoices pohip disclaims any duty to notify users of updates wise, sulfered by users or third parties as a result i	is document, there is no credi r any regulatory scheme work V0 flammability standard for p nicals/plastics/ shipped are made from polyvi ation in this form concerning : best of its knowledge and be e it has been compiled based of secrets and some information se parts and the average weig within silicon devices (silicon ny warranty, express or implie ated and its subsidiaries are co or changes to Material Contel of the users' reliance on the in	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to byl chloride (PVC) plastic. "Window envelopes" used to be substances restricted by RoHS in Microchip Technology Im lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarat intained in Microchip's standard terms and conditions of s at Declarations and shall not be liable for any damages, dir	tration of the i o obtain a test Id the packing corporated's is y Incorporated ided by raw m nd raw materi se estimates d ion. The exclus- iale. These are ect or indirect	chemical subs report at slip on the or semiconducto d cannot guara aterial supplie al suppliers. In o not include sive, limited p provided in N , consequenti	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct Aicrochip's al or		Copper Palladium (mg) Total	Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 98 2 100.00 % of Total Weight	0.2

	се Туре: QU6E 06 (Le	ad) UQFN 3x1.6x0.55mm (QU)		nation Base pper Alloy ((ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1.36	(mg) Total	Mold Compound	% ot Total Weight	20.25
Silica, fused	60676-86-0	Mold Compound	18.225	1.221	182.250		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	0.982	0.066	9,821	l	Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound Mold Compound	0.982	0.066	9.821		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.061	0.000	608		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	69.935	4.686	699,355		ourbon Black	Total	100.00	
Nickel	7440-02-0	Lead Frame	1.865	0.125	18,651	4.92	(mg) Total	Lead Frame	% of Total Weight	
Silicon	7440-21-3	Lead Frame	0.330	0.022	3,304	4.52	Copper	7440-50-8	95.24	70.40
Magnesium	7439-95-4	Lead Frame	0.073	0.005	734	1	Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	1.226	0.082	12.255		Silicon	7440-21-3	0.45	
Aa	7440-22-4	Die Attach	1.710	0.115	17,100		Magnesium	7439-95-4	0.45	
Epoxy resin	Trade secret	Die Attach	0.342	0.023	3.420		Silver	7440-22-4	1.67	
Aliphatic anhydride	Trade secret	Die Attach	0.114	0.008	1.140		Giver	Total	100.00	
2-Butoxyethyl acetate	112-07-2	Die Attach	0.057	0.000	570	0.15	(mg) Total	Die Attach	% of Total Weight	
		Die Attach		0.004		0.15				2.28
Polymeric material	Trade secret		0.057		570	1	Ag	7440-22-4	75.00	
Silicon	1303-00-0	Chip (Die)	2.120	0.142	21,200		Epoxy resin	Trade secret	15.00	
Doped Gold	7440-57-5	Wire Bond	0.540	0.036	5,400		Aliphatic anhydride	Trade secret	5.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.380	0.092	13,800		2-Butoxyethyl acetate	112-07-2	2.50	
		TOTALS:	100.000	6.700	1,000,000		Polymeric material	Trade secret	3	
	0.0067	g Total Mass						Total	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)).	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	5 Necasi Dire	ctive) and wi		0.14	(mg) Total	Chip (Die)	% of Total Weight	2.12
ipliance with the above EU Directives has been verned	a via internal design controls							1000.00.0	100	
hemical substance is absent from the list above, the c	hemical substance is NOT a	n intentional ingredient in the semiconductor device and,	to the best o	f Microchip T	echnology		GaAs	1303-00-0 Total	100 100.00	
rporated's knowledge and belief as of the date of this of is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0	document, there is no credib any regulatory scheme world- flammability standard for pla	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer	tration of the	chemical sul		0.04	GaAs (mg) Total			
rporated's knowledge and belief as of the date of this of is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic	document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concent wide.	tration of the	e chemical sul t report at	bstance, if	0.04	L	Total	100.00	
proprated's knowledge and belief as of the date of this of is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information reir original packing materials is true and correct to the completeness and accuracy of data in this form because plier information is often protected from disclosure as	document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyviny ion in this form concerning si e best of its knowledge and b use it has been compiled base is trade secrets and some info	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concern wide. Instics. You can access the UL iQTM family of databases to reason access the UL iQTM family of access reason access to the Construction of the Construct reason access the UL iQTM family of access reason access to the Construct access to the Construct a	o obtain a tes o obtain a tes ld the packin corporated's ogy Incorpor- provided by r. emblers and r	e chemical sul t report at g slip on the semiconduct ated cannot g aw material su aw material su	bstance, if outer box tor devices juarantee uppliers. suppliers.	0.04	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.54
proprated's knowledge and belief as of the date of this (is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatin- eir original packing materials is true and correct to the completeness and accuracy of data in this form becaus plier information is often protected from disclosure as rmation is provided only as estimates of the average w ude trace levels of dopants, metals, and non-metal mat rochip Technology Incorporated does not provide any '	document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyviny ion in this form concerning si e best of its knowledge and b se it has been compiled base is trade secrets and some info weight of these parts and the - terials contained within silico warranty, express or implied, d and its subsidiaries are cor	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concern wide. Instics. You can access the UL iQTM family of databases to reason access the UL iQTM family of access reason access to the Construction of the Construct reason access the UL iQTM family of access reason access to the Construct access to the Construct a	tration of the o obtain a tes ld the packin corporated's ogy incorpor provided by ri- emblers and r nponents. Th	e chemical sul t report at g slip on the semiconduci ated cannot g aw material s ese estimates usive, limited	bstance, if outer box tor devices juarantee uppliers. suppliers. s do not product	0.04	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight 100.00	0.54
proprated's knowledge and belief as of the date of this of is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati- neir original packing materials is true and correct to the completeness and accuracy of data in this form becaus piler information is often protected from disclosure as rmation is provided only as estimates of the average w ude trace levels of dopants, metals, and non-metal mat rochip Technology Incorporated does not provide any ' ranties provided by Microchip Technology Incorporate rochip's quotations, sales order acknowledgement, and rochip disclaims any duty to notify users of updates or	document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyviny ion in this form concerning si e best of its knowledge and b use it has been compiled base trade secrets and some info veight of these parts and the terials contained within silico warranty, express or implied, ed and its subsidiaries are cor d invoices. r changes to Material Content the users' reliance on the info	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concern wide. Instics. You can access the UL iQTM family of databases to a concern a set of the database to the set of the set of the set of the abstances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technology of a on the ranges provided in Material Safety Data Sheets p mation may not have been provided by subcontract asse average weight of anticipated significant toxic metals cor n devices (silicon IC) in the finished parts. with respect to the information provided in this declarati	tration of the o obtain a tes ld the packin corporated's ogy Incorpor- rovided by r- emblers and r nponents. Th ion. The exclu- iale. These ar ect or indirec	e chemical sul t report at g slip on the o ated cannot g aw material s aw material s ese estimates usive, limited e provided in t, consequen	bstance, if outer box tor devices juarantee juppliers. suppliers. s do not product tial or		(mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 100.00 100.00	0.54
porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic orotective "tubes" in which the specific product is shi zertain "reels" may be made from PVC plastic. bochip Technology Incorporated believes the informatii eri original packing materials is true and correct to the ompleteness and accuracy of data in this form becaus olier information is often protected from disclosure as mation is provided only as estimates of the average w de trace levels of dopants, metals, and non-metal mat opchip Technology Incorporated does not provide any ' anties provided by Microchip Technology Incorporate opchip disclaims any duty to notify users of updates or wise, suffered by users or third parties as a result of i	document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyviny ion in this form concerning si e best of its knowledge and b use it has been compiled base trade secrets and some info veight of these parts and the terials contained within silico warranty, express or implied, ed and its subsidiaries are cor d invoices. r changes to Material Content the users' reliance on the info	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer- wide. Istics. You can access the UL iQTM family of databases to rl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technolo d on the ranges provided in Material Safety Data Sheets p rmation may not have been provided by subcontract asso average weight of anticipated significant toxic metals cor n devices (silicon IC) in the finished parts. with respect to the information provided in this declarati tataned in Microchip's standard terms and conditions of s Declarations and shall not be liable for any damages, dir	tration of the o obtain a tes ld the packin corporated's ogy Incorpor- rovided by r- emblers and r nponents. Th ion. The exclu- iale. These ar ect or indirec	e chemical sul t report at g slip on the o ated cannot g aw material s aw material s ese estimates usive, limited e provided in t, consequen	bstance, if outer box tor devices juarantee juppliers. suppliers. s do not product tial or		(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 100.00 100.00 % of Total Weight	0.54

				nation Base pper Alloy (0			•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: NA 10 UDF									e3
		"Contained In"	% I otal			4.00	(mm) Tatal	Mold Compound	% ot Total Weight	34.08
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	4.02	(mg) Total	Mold Compound	% of Total Weight	34.08
Silica, fused	60676-86-0	Mold Compound	30.672	3.619	306,720		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	1.653	0.195	16,529		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	1.653	0.195	16,529		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.102	0.012	1,022		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	43.363	5.117	433,632			Total	100.00	
Nickel	7440-02-0	Lead Frame	1.156	0.136	11,565	5.37	(mg) Total	Lead Frame	% of Total Weight	45.53
Silicon	7440-21-3	Lead Frame	0.205	0.024	2,049		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.046	0.005	455		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.760	0.090	7,599		Silicon	7440-21-3	0.45	
Silver Acrylate resins Proprietary	7440-22-4 Trade Secret	Die Attach Die Attach	2.200 0.508	0.260	21,996 5,076		Magnesium Silver	7439-95-4 7440-22-4	0.10	
		Die Attach		0.060	5,076		Silver			
Treated silica Heterocyclic organic compound	Trade Secret Trade Secret	Die Attach	0.056	0.007	564 564		() 7 ()	Total	100.00	2.82
						0.33	(mg) Total	Die Attach	% of Total Weight	2.82
Silicon	7440-21-3	Chip (Die)	14.370	1.696	143,700		Silver	7440-22-4	78.00	
Gold	7440-57-5 7440-31-5	Wire Bond Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.060 2.140	0.125 0.253	10,600 21,400		Acrylate resins Proprietary Treated silica	Trade Secret Trade Secret	18.00	
111	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 nour TOTALS:	2.140 100.000	11.800	1.000.000	11-		Trade Secret	2.00	
			100.000	11.000	1,000,000	не	terocyclic organic compound	Trade Secret	2.00	
	0.0118	g Total Mass						TOLA	100.00	
This semiconductor device and its homogenous materials cor Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Dire	ctive) and wit	th EU	1.70	(mg) Total	Chip (Die)	% of Total Weight	14.37
Compliance with the above EU Directives has been verified via	a internal design controls	supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
-	-							Total	100.00	
If a chemical substance is absent from the list above, the chem Incorporated's knowledge and belief as of the date of this doc any, is not below the threshold of regulatory concern for any r	ument, there is no credibl	le reason to believe that the unavoidable impurity concen								
Molding compounds used by Microchip meet the UL94 V0 flan http://ul.com/global/eng/pages/offerings/industries/chemicals/		stics. You can access the UL iQTM family of databases to	o obtain a tes	t report at		0.13	(mg) Total	Wire Bond	% of Total Weight	1.06
The protective "tubes" in which the specific product is shippe and certain "reels" may be made from PVC plastic.	ed are made from polyviny	I chloride (PVC) plastic. "Window envelopes" used to ho	ld the packin	g slip on the o	outer box		Gold	7440-57-5	100.00	
Microchip Technology Incorporated believes the information i in their original packing materials is true and correct to the be the completeness and accuracy of data in this form because it Supplier information is often protected from disclosure as trad Information is provided only as estimates of the average weigi include trace levels of dopants, metals, and non-metal materia	st of its knowledge and b t has been compiled base de secrets and some infor ht of these parts and the a	elief, as of the date listed in this form. Microchip Technol d on the ranges provided in Material Safety Data Sheets p rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	ogy Incorpor provided by r emblers and r	ated cannot g aw material su aw material s	uarantee uppliers. uppliers.			Total	100.00	-
Microchip Technology Incorporated does not provide any war warranties provided by Microchip Technology Incorporated ar quotations, sales order acknowledgement, and invoices.						0.25	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.14
Microchip disclaims any duty to notify users of updates or cha otherwise, suffered by users or third parties as a result of the or of this Certificate of Compliance for semiconductor produc	users' reliance on the info						Tin	7440-31-5	100.00	
								Total	100.00	-
						11.80	0			100.000

	e Type: QUBE 12 (Lead) UQFN 2x2x0.55mm (QM)	-	nation Base / pper Alloy (C			•	ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1.74	(mg) Total	Mold Compound	% ot Total Weight	34.08
Silica, fused	60676-86-0	Mold Compound	30.672	1.564	306,720		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.653	0.084	16,529	Epox	xy Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	1.653	0.084	16,529		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.102	0.005	1,022		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	43.363	2.212	433,632			Total	100.00	
Nickel	7440-02-0	Lead Frame	1.156	0.059	11,565	2.32	(mg) Total	Lead Frame	% of Total Weight	45.53
Silicon	7440-21-3	Lead Frame	0.205	0.010	2,049		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.046	0.002	455		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.760	0.039	7,599		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	2.256	0.115	22,560		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.564	0.029	5,640		Silver	7440-22-4	1.67	
GaAs	1303-00-0	Chip (Die)	14.370	0.733	143,700			Total	100.00	
Doped Gold	7440-57-5	Wire Bond	1.060	0.054	10,600	0.14	(mg) Total	Die Attach	% of Total Weight	2.82
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.140	0.109	21,400		Silver	7440-22-4	80.00	
		TOTALS:	100.000	5.100	1,000,000		Epoxy Resin	Trade secret	20.00	
	0.0051	g Total Mass						Total	100.00	
pliance with the above EU Directives has been verified	•	s, supplier declarations, and /or analytical test data.		ctive) and wit		0.73	(mg) Total GaAs	Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	14.37
rporated's knowledge and belief as of the date of this de	emical substance is NOT a ocument, there is no credit	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer	to the best o	f Microchip Te	echnology	0.73		1303-00-0	100	14.37
pliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an	emical substance is NOT a ocument, there is no credit y regulatory scheme world ammability standard for pla	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer	to the best o tration of the	f Microchip Te chemical sub	echnology	0.73		1303-00-0	100	14.37
ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this di is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fl ://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic.	emical substance is NOT a scument, there is no credit y regulatory scheme world ammability standard for pl Is/plastics/ ped are made from polyvin	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho	to the best o tration of the o obtain a tes Id the packin	f Microchip Te chemical sub t report at g slip on the c	echnology ostance, if outer box		GaAs	1303-00-0 Total	100	
pliance with the above EU Directives has been verified chemical substance is absent from the list above, the che rporated's knowledge and belief as of the date of this di is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information eir original packing materials is true and correct to the isompleteness and accuracy of data in this form because plier information is often protected from disclosure as t mation is provided only as estimates of the average we de trace levels of dopants, metals, and non-metal mate ochip Technology Incorporated does not provide any w anties provided by Microchip Technology Incorporated	emical substance is NOT a scument, there is no credit y regulatory scheme world ammability standard for pl is/plastics/ ped are made from polyvin n in this form concerning s best of its knowledge and t e it has been compiled base rade secrets and some info ight of these parts and the rials contained within silico arranty, express or implied and its subsidiaries are co	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by ROHS in Microchip Technology In leilief, as of the date listed in this form. Microchip Technology In mation may not have been provided by subcontract asse average weight of anticipated significant toxic metals cor	to the best o tration of the o obtain a test ld the packin corporated's ogy Incorpor rovided by ra emblers and r nponents. Th	f Microchip To chemical sub t report at g slip on the o semiconduct ated cannot g aw material su aw material su ese estimates usive, limited	achnology bstance, if buter box or devices uarantee uppliers. uppliers. do not product		GaAs (mg) Total (mg) Total (mg) Total	1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00	
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch oporated's knowledge and belief as of the date of this di is not below the threshold of regulatory concern for an ing compounds used by Microchip meet the UL94 V0 fl /ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship tertain "reels" may be made from PVC plastic. whip Technology Incorporated believes the information is provided only as estimates of the average we de trace levels of dopants, metals, and non-metal mate bechip Technology Incorporated does not provide any we mation is provided only as estimates of the average we de trace levels of dopants, metals, and non-metal mate bechip Technology Incorporated does not provide any we inteis provided by Microchip Technology Incorporated bechip's quotations, sales order acknowledgement, and bechip disclaims any duty to notify users of updates or or	emical substance is NOT a socument, there is no credit y regulatory scheme world ammability standard for pl (s/plastics/ ped are made from polyvin h in this form concerning s best of its knowledge and t it has been compiled base rade secrets and some info ight of these parts and the rials contained within silico arranty, express or implied and its subsidiaries are co invoices. thanges to Material Conten	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In leilef, as of the date listed in this form. Microchip Technology In mation may not have been provided by subcontract asse average weight of anticipated significant toxic metals cor on devices (silicon IC) in the finished parts. , with respect to the information provided in this declarati	to the best o tration of the o obtain a tes ld the packin acorporated's ogy Incorpora rovided by ra moblers and r nponents. Th ion. The exclu- iale. These ar ect or indirec	f Microchip Te chemical sub t report at g slip on the o semiconduct ated cannot g aw material s aw material s aw material s ese estimates usive, limited e provided in t, consequent	echnology ostance, if outer box or devices uarantee uppliers. is do not product tial or	0.05	GaAs (mg) Total (mg) Total (mg) Total	1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100 100.00 % of Total Weight 100.00 100.00	1.06

5.100

	e Type: QUCE 16 (Lead) UQFN/XDFN 3x3x0.45mm (QR)		nation Base . pper Alloy (C	-			ogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Markir and/or Pkg. Labeling e3
		"Contained In"	% I otal							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	10.61	(mg) Total	Mold Compound	% ot Total Weight	51.99
Silica, fused	60676-86-0	Mold Compound	46.791	9.545	467,910		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	2.522	0.514	25,215		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.522	0.514	25,215		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.156	0.032	1,560		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	39.630	8.084	396,298			Total	100.00	•
Nickel	7440-02-0	Lead Frame	1.057	0.216	10,569	8.49	(mg) Total	Lead Frame	% of Total Weight	41.61
Silicon	7440-21-3	Lead Frame	0.187	0.038	1,872		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.042	0.008	416		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.694	0.142	6,945		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.632	0.129	6,320		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.158	0.032	1,580		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.170	0.443	21,700			Total	100.00	-
Doped Gold	7440-57-5	Wire Bond	0.490	0.100	4,900	0.16	(mg) Total	Die Attach	% of Total Weight	0.79
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	0.602	29,500		Silver	7440-22-4	80.00	
		TOTALS:	100.000	20.400	1,000,000		Epoxy Resin	Trade secret	20.00	
	0.0204	g Total Mass						Total	100.00	
semiconductor device and its homogenous materials of ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 20	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ective) and wi	th EU	0.44				
npliance with the above EU Directives has been verified	Ū.		1 - 1k - k 1	f Missouch in T		0.44	(mg) Total Gallium arsenide	Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	2.17
npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch proprated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an	nemical substance is NOT a ocument, there is no credit y regulatory scheme world	in intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide.	ntration of the	chemical su		0.44		1303-00-0	100	2.17
npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch roporated's knowledge and belief as of the date of this d , is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fl	nemical substance is NOT a ocument, there is no credit y regulatory scheme world lammability standard for pl	In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	ntration of the	chemical su		0.44		1303-00-0	100	0.49
npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this di , is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fi ://ul.com/global/eng/pages/offerings/industries/chemica	nemical substance is NOT a ocument, there is no credit y regulatory scheme world lammability standard for pl lls/plastics/	in intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide.	ntration of the	e chemical su t report at	bstance, if		Gallium arsenide	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	0.49
npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch proprated's knowledge and belief as of the date of this di , is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fl c//ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information eir original packing materials is true and correct to the li completeness and accuracy of data in this form becauss uplier information is often protected from disclosure as to rmation is provided only as estimates of the average we	nemical substance is NOT a ocument, there is no credit y regulatory scheme world lammability standard for pl ils/plastics/ ped are made from polyvin n in this form concerning s best of its knowledge and l e it has been compiled base rade secrets and some info- tight of these parts and the	In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In belief, as of the date listed in this form. Microchip Technol ad on the ranges provided in Material Safety Data Sheets p ormation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	ntration of the o obtain a tes old the packin ncorporated's ogy Incorpora orovided by ra emblers and r	e chemical su t report at g slip on the semiconduc ated cannot g aw material s raw material s	bstance, if outer box tor devices juarantee uppliers. suppliers.		Gallium arsenide	1303-00-0 Total Wire Bond	100 100.00 % of Total Weight 100.00	0.49
npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch proprated's knowledge and belief as of the date of this di , is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fl c//ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information heir original packing materials is true and correct to the completeness and accuracy of data in this form becauss uplier information is often protected from disclosure as to rmation is provided only as estimates of the average we ude trace levels of dopants, metals, and non-metal mater rochip Technology Incorporated does not provide any w	nemical substance is NOT a ocument, there is no credit y regulatory scheme world lammability standard for pl is/plastics/ ped are made from polyvin n in this form concerning s best of its knowledge and l e it has been compiled base rade secrets and some inf eight of these parts and the right contained within silice varranty, express or implied and its subsidiaries are co	In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In belief, as of the date listed in this form. Microchip Technol ad on the ranges provided in Material Safety Data Sheets p ormation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	ntration of the o obtain a tes old the packin ncorporated's ogy Incorpora provided by ra emblers and r mponents. Th ion. The exclu	e chemical su t report at g slip on the semiconduc ated cannot g aw material s aw material s ese estimate: usive, limited	bstance, if outer box tor devices juarantee juppliers. uppliers. s do not product		Gallium arsenide	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	0.49
npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch proprated's knowledge and belief as of the date of this di , is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fl ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ier original packing materials is true and correct to the i completeness and accuracy of data in this form because piler information is often protected from disclosure as t urmation is provided only as estimates of the average we ude trace levels of dopants, metals, and non-metal mate rochip Technology Microchip Technology Incorporated rochip's quotations, sales order acknowledgement, and rochip disclaims any duty to notify users of updates or of	emical substance is NOT a ocument, there is no credit y regulatory scheme world lammability standard for pl ils/plastics/ pped are made from polyvin n in this form concerning s best of its knowledge and l e it has been compiled bass tade secrets and some infe eight of these parts and the irlals contained within silic varranty, express or implied and its subsidiaries are co invoices. changes to Material Conten e users' reliance on the inf	In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In belief, as of the date listed in this form. Microchip Technology In belief, as of the date listed in this form. Microchip Technology In primation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con on devices (silicon IC) in the finished parts.	ntration of the o obtain a tes old the packin ncorporated's ogy Incorpor- provided by ra- emblers and r mponents. Th ion. The exclu- sale. These ar rect or indirect	e chemical su t report at g slip on the semiconduc ated cannot <u>g</u> aw material s aw material s ese estimate: usive, limited e provided in	bstance, if outer box tor devices juarantee uppliers. uppliers. s do not product tial or	0.10	Gallium arsenide (mg) Total Doped Gold	1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 100.00	0.49
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ing compounds used by Microchip meet the UL94 V0 ff //ul.com/global/eng/pages/offerings/industries/chemica orotective "tubes" in which the specific product is ship pertain "reels" may be made from PVC plastic. Dechip Technology Incorporated believes the information eir original packing materials is true and correct to the ompleteness and accuracy of data in this form because iller information is often protected from disclosure as t mation is provided only as estimates of the average we de trace levels of dopants, metals, and non-metal mate bechip Technology Incorporated does not provide any w antites provided by Microchip Technology Incorporated occhip's quotations, sales order acknowledgement, and ochip disclaims any duty to notify users of updates or c	emical substance is NOT a ocument, there is no credit y regulatory scheme world lammability standard for pl ils/plastics/ pped are made from polyvin n in this form concerning s best of its knowledge and l e it has been compiled bass tade secrets and some infe eight of these parts and the irlals contained within silic varranty, express or implied and its subsidiaries are co invoices. changes to Material Conten e users' reliance on the inf	In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In belief, as of the date listed in this form. Microchip Technology of the ranges provided in Material Safety Data Sheets p ormation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con on devices (silicon IC) in the finished parts. I, with respect to the information provided in this declarati ntained in Microchip's standard terms and conditions of s	ntration of the o obtain a tes old the packin ncorporated's ogy Incorpor- provided by ra- emblers and r mponents. Th ion. The exclu- sale. These ar rect or indirect	e chemical su t report at g slip on the semiconduc ated cannot <u>g</u> aw material s aw material s ese estimate: usive, limited e provided in	bstance, if outer box tor devices juarantee uppliers. uppliers. s do not product tial or	0.10	(mg) Total (mg) Total (mg) Total	1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100.00 100.00	0.49

AICROCHIP Semiconductor Device	e Type: Q3DF 20 # ~	ad) UQFN 3x3x0.55mm (QD)	-	nination Base Copper Alloy (nogeneous Materials: (e.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	e Type. QJDL 20 (Lea	"Contained In"	% I otal	1	1					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	10.59	(mg) Total	Mold Compound	% ot Total Weight	51.57
Silica, fused	60676-86-0	Mold Compound	46.413	9.529	464,130		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.501	0.513	25.011		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.501	0.513	25,011		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.155	0.032	1,547		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	39.916	8.195	399,155			Total	100.00	
Nickel	7440-02-0	Lead Frame	1.065	0.219	10,645	8.60	(mg) Total	Lead Frame	% of Total Weight	41.91
Silver	7440-22-4	Lead Frame	0.699	0.144	6.995		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.189	0.039	1,886		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.042	0.009	419		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.656	0.135	6.560		Silicon	7440-21-3	0.45	
Epoxy Resin	Trade secret	Die Attach	0.164	0.034	1.640		Magnesium	7439-95-4	0.10	
Silicon	7440-21-3	Chip (Die)	2.180	0.448	21,800		g	Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.530	0.109	5,300	0.17	(mg) Total	Die Attach	% of Total Weight	0.82
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2,990	0.614	29.900	0.17	Silver	7440-22-4	80.00	0.02
IIII	7440-31-5	TOTALS:	100.000	20.530	1.000.000		Epoxy Resin	Trade secret	20.00	
	0.00050	Total Mass	100.000	20.330	1,000,000		Epoxy Resin	Total	100.00	
//53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified	via internal design controls, s			ŗ	ŀ	0.45	(mg) Total Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight 100	2.18
2/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified shemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this do	via internal design controls, s emical substance is NOT an i ocument, there is no credible		to the best o	of Microchip Te	echnology	0.45		,	-	2.18
2/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this do ot below the threshold of regulatory concern for any reg	via internal design controls, s emical substance is NOT an i ocument, there is no credible ulatory scheme world-wide. ammability standard for plasi	supplier declarations, and /or analytical test data.	to the best o tration of the	of Microchip Te e chemical sub	echnology	0.45		7440-21-3	100	0.53
2/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified to chemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this do to below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 flic ://ul.com/global/eng/pages/offerings/industries/chemical	via internal design controls, s emical substance is NOT an i ocument, there is no credible ulatory scheme world-wide. ammability standard for plast (s/plastics/	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concent	to the best o tration of the o obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if any,		Doped Silicon	7440-21-3 Total	100 100.00	
2/53/EC (End-of-Life Vehicles (ELV) Directive). hpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this dd to below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp ain "reels" may be made from PVC plastic. wochip Technology Incorporated believes the information or original packing materials is true and correct to the bes pleteness and accuracy of data in this form because it h mation is often protected from disclosure as trade secr	via internal design controls, s emical substance is NOT an i ocument, there is no credible ulatory scheme world-wide. ammability standard for plast is/plastics/ ped are made from polyvinyl n in this form concerning sub st of its knowledge and belief has been compiled based on t ets and some information ma arts and the average weight c	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concent tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to hol pstances restricted by RoHS in Microchip Technology In f, as of the date listed in this form. Microchip Technology the ranges provided by subcontract assemblers an of anticipated significant toxic metals components. Thes	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw i nd raw mate	of Microchip To e chemical sub st report at ng slip on the o s semiconduct ed cannot gua material suppliers.	echnology sstance, if any, buter box and or devices in rantee the iers. Supplier Information is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
2/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified to chemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this dd bot below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp ain "reels" may be made from PVC plastic. to ochip Technology Incorporated believes the information r original packing materials is true and correct to the best pleteness and accuracy of data in this form because it h mation is often protected from disclosure as trade secrer vided only as estimates of the average weight of these pi opants, metals, and non-metal materials contained withi ochip Technology Incorporated does not provide any w	via internal design controls, s emical substance is NOT an i ocument, there is no credible ulatory scheme world-wide. ammability standard for plast is/plastics/ ped are made from polyvinyl n in this form concerning sub st of its knowledge and belief as been compiled based on n ets and some information n arts and the average weight o n silicon devices (silicon IC) arranty, express or implied, v	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concent tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to hol pstances restricted by RoHS in Microchip Technology In f, as of the date listed in this form. Microchip Technology the ranges provided by subcontract assemblers an of anticipated significant toxic metals components. Thes	to the best o tration of the p obtain a tes ld the packin corporated's y Incorporate ided by raw in dr aw mate se estimates on. The excli	of Microchip Te e chemical sub at report at ng slip on the o s semiconduct ed cannot gua material suppliers. do not include usive, limited	echnology stance, if any, puter box and or devices in rantee the iers. Supplier Information Information trace levels product		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
2/53/EC (End-of-Life Vehicles (ELV) Directive). hpliance with the above EU Directives has been verified in chemical substance is absent from the list above, the che rporated's knowledge and belief as of the date of this date to below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 fit ://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp ain "reels" may be made from PVC plastic. orohip Technology Incorporated believes the information r original packing materials is true and correct to the best pleteness and accuracy of data in this form because it h rmation is often protected from disclosure as trade seern vided only as estimates of the average weight of these privated non-metal materials contained within ochip Technology Incorporated does not provide any w mattes provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or c	via internal design controls, s emical substance is NOT an i ocument, there is no credible ulatory scheme world-wide. ammability standard for plast is/plastics/ ped are made from polyvinyl n in this form concerning sub st of its knowledge and belief as been compiled based on 1 as been compiled based on 1 ets and some information ma arts and the average weight c in silicon devices (silicon IC) arranty, express or implied, v and its subsidiaries are cont: thanges to Material Content E e users' reliance on the infor	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concent tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to hol patterness restricted by RoHS in Microchip Technology Int f, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provi y not have been provided by subcontract assemblers ar of anticipated significant toxic metals components. Thes in the finished parts. with respect to the information provided in this declarativ	to the best o tration of the o obtain a tes o obtain a tes ld the packin corporated ¹⁵ ided by raw ind raw mate se estimates on. The excli ale. These ar ect or indirec	of Microchip Te e chemical sub st report at mg slip on the of semiconduct ed cannot gua material suppliers. do not include usive, limited re provided in ct, consequent	echnology stance, if any, outer box and or devices in rantee the iers. Supplier Information is e trace levels product Microchip's ital or	0.11	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 100.00	0.53

Semiconductor Device	Type: MV 28 (Lea	ი) LIOEN გაგაენიით (R6)		nation Base A pper Alloy (C				ogeneous Materials: a.g. pc boards, display	/s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Total				1			
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	11.99	(mg) Total	Mold Compound	% ot Total Weight	45.93
Silica, fused	60676-86-0	Mold Compound	41.337	10.789	413.370		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.228	0.581	22.276	Epo	xy Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.228	0.581	22,276		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.138	0.036	1,378		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	34.095	8.899	340,953			Total	100.00	
Tin	7440-31-5	Lead Frame	0.088	0.023	875	9.14	(mg) Total	Lead Frame	% of Total Weight	35
Silver	7440-22-4	Lead Frame	0.667	0.174	6,668		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.063	0.016	630		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.088	0.023	875		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.123	0.293	11,232		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.259	0.068	2,592		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.029	0.008	288			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.029	0.008	288	0.38	(mg) Total	Die Attach	% of Total Weight	1.44
Silicon	7440-21-3	Chip (Die)	8,700	2.271	87.000		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.510	0.133	5,100		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	8.420	2.198	84.200		Treated silica	Trade Secret	2	
	1110 01 0	TOTALS:	100.000	26.100	1.000.000	Het	erocyclic organic compound	Trade Secret	2	
					.,,	1101	orodyolio organio compound		-	
53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is. supplier declarations. and /or analytical test data.	IS Recast Dire	ctive) and with	EU Directive	2.27	Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight 100	8.7
//53/EC (End-of-Life Vehicles (ELV) Directive). Ipliance with the above EU Directives has been verified themical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d	comply with EU Directive 2 via internal design contro nemical substance is NOT ocument, there is no credi	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ls, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer	, to the best of	Microchip Teo	chnology	2.27	Total (mg) Doped Silicon	Chip (Die)		8.7
#53/EC (End-of-Life Vehicles (ELV) Directive). Ipliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d to below the threshold of regulatory concern for any reg	with EU Directive 2 via internal design contro memical substance is NOT ocument, there is no credi ulatory scheme world-wic ammability standard for p	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH ls, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer	, to the best of ntration of the	Microchip Teo chemical subs	chnology	2.27		Chip (Die) 7440-21-3	% of Total Weight	8.7
#53/EC (End-of-Life Vehicles (ELV) Directive). Ipliance with the above EU Directives has been verified themical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d to below the threshold of regulatory concern for any reg ting compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica	win internal design contro via internal design contro nemical substance is NOT occument, there is no credi ulatory scheme world-wic ammability standard for p Is/plastics/	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer e.	, to the best of ntration of the o obtain a test	Microchip Teo chemical subs report at	chnology stance, if any,		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
#53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d to below the threshold of regulatory concern for any reg ting compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because it i mation is often protected from disclosure as trade seci-	via internal design contro via internal design contro nemical substance is NOT occument, there is no credi ulatory scheme world-wic ammability standard for p Is/plastics/ ped are made from polyvi n in this form concerning st of its knowledge and be nas been compiled based ets and some information arts and the average weig	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer e. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's gy Incorporate vided by raw m	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara naterial suppliers. Ir al suppliers. Ir	chnology stance, if any, uter box and r devices in antee the ers. Supplier iformation is		(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
#53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d to below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because if I rmation is often protected from disclosure as trade seci ided only as estimates of the average weight of these p popants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any w	via internal design contro emical substance is NOT ocument, there is no credi ulatory scheme world-wic ammability standard for p Is/plastics/ ped are made from polyvi n in this form concerning st of its knowledge and be as been compiled based ets and some information arts and the average weig in silicon devices (silicon arranty, express or implie	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer e. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's gy Incorporate vided by raw m and raw mater ose estimates o tion. The exclu	Microchip Tec chemical subs report at y slip on the ou semiconducto d cannot guars aterial supplie al suppliers. Ir lo not include sive, limited p	chnology stance, if any, uter box and r devices in antee the ers. Supplier nformation is trace levels roduct		(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
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MICROCHIP Semiconductor Devi	ice Type: MV/MX 28	uQFN 6x6x0.5mm (MQ)		nination Base Copper Alloy			•	nogeneous Materials: 'e.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	1.24	(mg) Total	Mold Compound	% ot Total Weight	42.75
Silica, fused	60676-86-0	Mold Compound	38.475	1.120	384.750		Silica, fused	60676-86-0	90.00	
Epoxy Resin	500-033-5	Mold Compound	2.073	0.060	20.734		Epoxy Resin	500-033-5	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.073	0.060	20,734		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.128	0.004	1.283		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	42.249	1.229	422.489			Total	100.00	
Tin	7440-31-5	Lead Frame	0.108	0.003	1.084	1.26	(mg) Total	Lead Frame	% of Total Weight	43.37
Silver	7440-22-4	Lead Frame	0.826	0.024	8,262		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.078	0.002	781		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.108	0.003	1,084		Silver	7440-22-4	1.91	
Silica, vitreous	60676-86-0	Die Attach	0.483	0.014	4,830		Zinc	7440-66-6	0.18	
Solid Epoxy Resin	Trade Secret	Die Attach	0.897	0.026	8,970		Chromium	7440-47-3	0.25	
Silicon	7440-21-3	Chip (Die)	8.950	0.260	89,500			Total	100.00	
Gold	7440-57-5	Wire Bond	1.380	0.040	13,800	0.04	(mg) Total	Die Attach	% of Total Weight	1.38
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.170	0.063	21,700		Silica, vitreous	60676-86-0	35.00	
		TOTALS:	100.000	2.910	1,000,000		Solid Epoxy Resin	Trade Secret	65.00	
	0.0029	g Total Mass						Total	100.00	
his semiconductor device and its homogenous materials	s comply with EU Directive 20	02/95/EC (RoHS Directive) EU Directive 2011/65/EU (RoHS	Decest Dire							
			5 Recast Dire	ctive) and wit	h EU Directive	0.26	(mg) Total	Chip (Die)	% of Total Weight	8.95
002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verifie	ed via internal design controls	supplier declarations, and /or analytical test data.				0.26	(mg) Total Doped Silicon	7440-21-3	100	8.95
002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the scorporated's knowledge and belief as of the date of this not below the threshold of regulatory concern for any re	ed via internal design controls chemical substance is NOT ar document, there is no credibl egulatory scheme world-wide.	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen	to the best o tration of the	f Microchip Te chemical sub	echnology	0.26	(0,	,	100 100.00	8.95
002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this not below the threshold of regulatory concern for any r olding compounds used by Microchip meet the UL94 V0	ed via internal design controls chemical substance is NOT ar document, there is no credibl egulatory scheme world-wide. flammability standard for pla	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen	to the best o tration of the	f Microchip Te chemical sub	echnology	0.26	(0)	7440-21-3	100	8.95
002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verifie is a chemical substance is absent from the list above, the noorporated's knowledge and belief as of the date of this s not below the threshold of regulatory concern for any r folding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemi	ed via internal design controls, chemical substance is NOT ar document, there is no credibl egulatory scheme world-wide. flammability standard for pla cals/plastics/	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen	to the best o tration of the o obtain a tes	f Microchip Te chemical sub t report at	echnology ostance, if any,		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verifie i a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this s not below the threshold of regulatory concern for any re folding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is sh ertain "reels" may be made from PVC plastic. Hicrochip Technology Incorporated believes the informat heir original packing materials is true and correct to the b ompleteness and accuracy of data in this form because in formation is often protected from disclosure as trade se	ed via internal design controls chemical substance is NOT ar document, there is no credibl egulatory scheme world-wide. I flammability standard for pla cals/plastics/ ipped are made from polyviny ion in this form concerning su sest of its knowledge and beliv it has been compiled based or ecrets and some information in parts and the average weight	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen stics. You can access the UL iQTM family of databases to relation of the date listed in this form. Microchip Technology In anges provided in Material Safety Data Sheets prov have not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw r nd raw mater	f Microchip Te chemical sub t report at g slip on the c semiconduct d cannot guai material suppliers.	echnology stance, if any, puter box and or devices in rantee the iers. Supplier Information is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the ncorporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for any re folding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemi- he protective "tubes" in which the specific product is sh ertain "reels" may be made from PVC plastic. Nicrochip Technology Incorporated believes the informat heir original packing materials is true and correct to the be information is often protected from disclosure as trade ser rovided only as estimates of the average weight of these f dopants, metals, and non-metal materials contained wit Nicrochip Technology Incorporated does not provide any	ed via internal design controls chemical substance is NOT ar document, there is no credibl egulatory scheme world-wide. I flammability standard for pla cals/plastics/ ipped are made from polyviny ion in this form concerning su best of its knowledge and belik it has been compiled based or crets and some information n parts and the average weight thin silicon devices (silicon IC warranty, express or implied,	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen stics. You can access the UL iQTM family of databases to relation of the date listed in this form. Microchip Technology In anges provided in Material Safety Data Sheets prov have not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw r nd raw mater se estimates on. The exclu	f Microchip Te o chemical sub t report at g slip on the c semiconduct: d cannot guan material suppli rial suppliers. do not include usive, limited (echnology ustance, if any, buter box and or devices in rantee the iers. Supplier Information is t trace levels product		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
00/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this not below the threshold of regulatory concern for any r polding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemic te protective "tubes" in which the specific product is sh rtain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatt eir original packing materials is true and correct to the E mpleteness and accuracy of data in this form because i formation is often protected from disclosure as trade se ovided only as estimates of the average weight of these dopants, metals, and non-metal materials contained will icrochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporated totations, sales order acknowledgement, and invoices. icrochip disclaims any duty to notify users of updates o	ed via internal design controls chemical substance is NOT ar document, there is no credibl egulatory scheme world-wide. I flammability standard for pla cals/plastics/ ipped are made from polyviny ion in this form concerning st best of its knowledge and belik it has been compiled based or crets and some information n e parts and the average weight thin silicon devices (silicon IC warranty, express or implied, ed and its subsidiaries are cor r changes to Material Content the users' reliance on the info	supplier declarations, and /or analytical test data. i intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen- stics. You can access the UL iQTM family of databases to d chloride (PVC) plastic. "Window envelopes" used to ho bistances restricted by RoHS in Microchip Technology In af, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov hay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The) in the finished parts. with respect to the information provided in this declarati	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw r nd raw mater ided by r nd raw mater ided by r nd raw mater ided by r nd r nd r nd r nd r nd r nd r nd r nd	f Microchip Te e chemical sub t report at g slip on the c semiconduct ed cannot guai naterial suppli rial suppliers. do not include usive, limited p e provided in t, consequent	echnology ostance, if any, outer box and or devices in rantee the iers. Supplier Information is o trace levels product Microchip's ial or	0.04	(mg) Total Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 100.00	1.38

Semiconductor Device	Type: MV 40 (Local)	110EN 54540 5mm (65)		ation Base Apper Alloy (C	-		•	ogeneous Materials: g. pc boards, display:	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
	Type: Int 40 (Lead)	"Contained In"	% Total			18.45	(mg) Total	Mold Compound	% ot Total Weight	43.41
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	16.45	(ilig) Totai	Mola Compound	% OF TOTAL Weight	43.41
Silica, fused	60676-86-0	Mold Compound	39.069	16.604	390,690		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.105	0.895	21,054	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.105	0.895	21,054		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.130	0.055	1,302		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	41.966	17.836	419,664			Total	100.00	
Tin	7440-31-5	Lead Frame	0.108	0.046	1,077	18.31	(mg) Total	Lead Frame	% of Total Weight	43.08
Silver	7440-22-4	Lead Frame	0.821	0.349	8,207		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.078	0.033	775		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.108	0.046	1,077		Silver	7440-22-4	1.91	
Silver	7440-22-4 Trade Secret	Die Attach Die Attach	1.240 0.286	0.527	12,402 2.862		Zinc Chromium	7440-66-6 7440-47-3	0.18 0.25	
Acrylate resins Proprietary		Die Attach Die Attach	0.286	-	2,862		Chromium	7440-47-3 Total	0.25	l
Treated silica	Trade Secret			0.014	318					
Heterocyclic organic compound	Trade Secret	Die Attach	0.032	0.014		0.68	(mg) Total	Die Attach 7440-22-4	% of Total Weight	1.59
Silicon Gold	7440-21-3 7440-57-5	Chip (Die) Wire Bond	6.650 1.540	2.826 0.655	66,500 15,400		Silver Acrylate resins Proprietary	7440-22-4 Trade Secret	78 18	
Tin	7440-37-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.730	1.585	37,300		Treated silica	Trade Secret	2	
1111	7440-31-5	TOTALS:	100.000	42.500	1.000.000	Hoto	rocyclic organic compound		2	
UTL / Material compilation	0.0405	Total Mass	100.000	42.500	1,000,000	Helei	rocyclic organic compound	Tiade Secret	-	J
	V) Directive).	tive 2002/95/EC (RoHS Directive), EU Directive 2011/	·	Recast Direc	tive) and	2.83	Total (mg)	Chip (Die)	% of Total Weight	6.65
npliance with the above EU Directives has been ver chemical substance is absent from the list above, t hnology Incorporated's knowledge and belief as of	V) Directive). ified via internal design c he chemical substance is the date of this documen	ontrols, supplier declarations, and /or analytical test NOT an intentional ingredient in the semiconductor t, there is no credible reason to believe that the unav	data. device and, to	o the best of	Microchip	2.83	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	6.65
npliance with the above EU Directives has been ver chemical substance is absent from the list above, t hnology Incorporated's knowledge and belief as of mical substance, if any, is not below the threshold ding compounds used by Microchip meet the UL94	V) Directive). ified via internal design c he chemical substance is the date of this documen of regulatory concern for V0 flammability standard	ontrols, supplier declarations, and /or analytical test NOT an intentional ingredient in the semiconductor t, there is no credible reason to believe that the unav	data. device and, to voidable imput	o the best of rity concentra	Microchip ation of the	2.83		7440-21-3	100	6.65
chemical substance is absent from the list above, t chenology Incorporated's knowledge and belief as of mical substance, if any, is not below the threshold lding compounds used by Microchip meet the UL94 o://ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is er box and certain "reels" may be made from PVC p	V) Directive). ified via internal design c he chemical substance is the date of this documen of regulatory concern for V0 flammability standard micals/plastics/ shipped are made from p plastic.	ontrols, supplier declarations, and /or analytical test NOT an intentional ingredient in the semiconductor t, there is no credible reason to believe that the unar any regulatory scheme world-wide. for plastics. You can access the UL iQTM family of o olyvinyl chloride (PVC) plastic. "Window envelopes"	data. device and, to voidable impur latabases to o ' used to hold	o the best of rity concentra btain a test r the packing	Microchip ation of the eport at		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
mpliance with the above EU Directives has been ver chemical substance is absent from the list above, t chnology Incorporated's knowledge and belief as of mical substance, if any, is not below the threshold liding compounds used by Microchip meet the UL94 o://ul.com/global/eng/pages/offerings/industries/che a protective "tubes" in which the specific product is er box and certain "reels" may be made from PVC p rochip Technology Incorporated believes the inform niconductor devices in their original packing materi honlogy Incorporated cannot guarantee the compli- ety Data Sheets provided by raw material suppliers. vided by subcontract assemblers and raw material icipated significant toxic metals components. These con (C) in the finished parts. rochip Technology Incorporated does not provide a	V) Directive). ified via internal design c he chemical substance is the date of this documen of regulatory concern for V0 flammability standard micals/plastics/ shipped are made from p plastic. antion in this form concer als is true and correct to steness and accuracy of suppliers. Information is e estimates do not include any warranty, express or	ontrols, supplier declarations, and /or analytical test NOT an intentional ingredient in the semiconductor t, there is no credible reason to believe that the unar any regulatory scheme world-wide. for plastics. You can access the UL iQTM family of o olyvinyl chloride (PVC) plastic. "Window envelopes" ning substances restricted by RoHS in Microchip Te the best of its knowledge and belief, as of the date li- lata in this form because it has been compiled base fron protected from disclosure as trade secrets and provided only as estimates of the average weight of t trace levels of dopants, metals, and non-metal mate mplied, with respect to the information provided in t	data. device and, to roidable impur latabases to o ' used to hold chnology Inco sted in this for d on the range some informa hese parts an arrials containe his declaration	the best of f rity concentr btain a test r the packing prporated's m. Microchip s provided in may not d the averag d within silic n. The exclus	Microchip ation of the eport at slip on the have been e weight of on devices ive, limited	0.65	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100 100.00	1.54
mpliance with the above EU Directives has been ver chemical substance is absent from the list above, t chnology Incorporated's knowledge and belief as of mical substance, if any, is not below the threshold lding compounds used by Microchip meet the UL94 sc//ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is er box and certain "reels" may be made from PVC p rochip Technology Incorporated believes the inforr niconductor devices in their original packing materi ichnology Incorporated cannot guarantee the compl ety Data Sheets provided by raw material suppliers. vided by subcontract assemblers and raw material icipated significant toxic metals components. These icon IC) in the finished parts. rochip Technology Incorporated does not provide a duct warranties provided by Microchip Technology vided in Microchip's quotations, sales order acknow rochip disclaims any duty to notify users of update	V) Directive). iffied via internal design c he chemical substance is the date of this documen of regulatory concern for V0 flammability standard micals/plastics/ shipped are made from p plastic. nation in this form concer als is true and correct to eteness and accuracy of 6 suppliers. Information is 6 suppliers. Information is 6 e estimates do not include any warranty, express or Incorporated and its sub wledgement, and invoices s or changes to Material (ontrols, supplier declarations, and /or analytical test NOT an intentional ingredient in the semiconductor t, there is no credible reason to believe that the una- any regulatory scheme world-wide. for plastics. You can access the UL iQTM family of o olyvinyl chloride (PVC) plastic. "Window envelopes' ning substances restricted by RoHS in Microchip Te the best of its knowledge and belief, as of the date li- lata in this form because it has been compiled base (ften protected from disclosure as trade secrets and provided only as estimates of the average weight of t frace levels of dopants, metals, and non-metal mate mplied, with respect to the information provided in t sidiaries are contained in Microchip's standard terms content Declarations and shall not be liable for any d	data. device and, to voidable impur latabases to o used to hold chnology Inco sted in this for d on the range some informa hese parts an erials containe nis declaration a and conditio amages, direc	o the best of f rity concentr- btain a test r the packing prporated's m. Microchip s provided in tion may not d the averag ed within silic n. The exclus ns of sale. The et or indirect,	Microchip ation of the eport at slip on the have been e weight of on devices ive, limited hese are		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100	
mpliance with the above EU Directives has been ver chemical substance is absent from the list above, t hnology Incorporated's knowledge and belief as of mical substance, if any, is not below the threshold ding compounds used by Microchip meet the UL94 ://ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is er box and certain "reels" may be made from PVC p rochip Technology Incorporated believes the inforn hiconductor devices in their original packing materi hinology Incorporated cannot guarantee the comple ety Data Sheets provided by raw material suppliers. vided by subcontract assemblers and raw material icipated significant toxic metals components. These con IC) in the finished parts. rochip Technology Incorporated does not provide a duct warranties provided by Microchip Technology vided in Microchip's quotations, sales order acknow rochip disclaims any duty to notify users of update	V) Directive). ified via internal design c he chemical substance is the date of this documen of regulatory concern for V0 flammability standard micals/plastics/ shipped are made from p plastic. nation in this form concer als is true and correct to atteness and accuracy of suppliers. Information is a estimates do not include any warranty, express or Incorporated and its sub vledgement, and invoices s or changes to Material Q parties as a result of the	ontrols, supplier declarations, and /or analytical test NOT an intentional ingredient in the semiconductor t, there is no credible reason to believe that the unar any regulatory scheme world-wide. for plastics. You can access the UL iQTM family of o solyvinyl chloride (PVC) plastic. "Window envelopes" ning substances restricted by RoHS in Microchip Te the best of its knowledge and belief, as of the date li- lata in this form because it has been compiled base fror protected from disclosure as trade secrets and rovided only as estimates of the average weight of to trace levels of dopants, metals, and non-metal mate mplied, with respect to the information provided in t isdiaries are contained in Microchip's standard terms content Declarations and shall not be liable for any d users' reliance on the information in Material Conten	data. device and, to voidable impur latabases to o used to hold chnology Inco sted in this for d on the range some informa hese parts an erials containe nis declaration a and conditio amages, direc	o the best of f rity concentr- btain a test r the packing prporated's m. Microchip s provided in tion may not d the averag ed within silic n. The exclus ns of sale. The et or indirect,	Microchip ation of the eport at slip on the have been e weight of on devices ive, limited hese are	0.65	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100 100.00 % of Total Weight 100 100.00	1.54

Semiconductor Device	Type: MV UQFN 48 6x6a	10.5mm (R7)	-	ination Base opper Alloy (•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	29.11	(mg) Total	Mold Compound	% ot Total Weight	45.63
Silica, fused	60676-86-0	Mold Compound	41.067	26.201	410,670		Silica, fused	60676-86-0	90.0000	
Epoxy Resin	Trade Secret	Mold Compound	2.213	1.412	22,131		Epoxy Resin	Trade Secret	4.85000	
Phenolic Resin	Trade Secret	Mold Compound	2.213	1.412	22,131		Phenolic Resin	Trade Secret	4.85000	
Carbon Black	1333-86-4	Mold Compound	0.137	0.087	1,369		Carbon Black	1333-86-4	0.30000	
Copper	7440-50-8	Lead Frame	38.352	24.469	383,523			Total	100.00	
Tin	7440-31-5	Lead Frame	0.098	0.063	984	25.12	(mg) Total	Lead Frame	% of Total Weight	39.37
Silver	7440-22-4	Lead Frame	0.750	0.478	7,500		Copper	7440-50-8	97.4150	
Zinc	7440-66-6	Lead Frame	0.071	0.045	709		Tin	7440-31-5	0.2500	
Chromium	7440-47-3	Lead Frame	0.098	0.063	984		Silver	7440-22-4	1.9050	
Silver	7440-22-4	Die Attach	1.201	0.766	12,012		Zinc	7440-66-6	0.1800	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.277	0.177	2,772		Chromium	7440-47-3	0.2500	
Treated silica	Trade Secret	Die Attach	0.031	0.020	308			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.031	0.020	308	0.98	(mg) Total	Die Attach	% of Total Weight	1.54
Silicon	7440-21-3	Chip (Die)	5.660	3.611	56,600	8200T	Silver	7440-22-4	78.00	
Gold	7440-57-5	Wire Bond	0.800	0.510	8,000		Acrylate resins Proprietary	Trade Secret	18.00	
Tin	7440-31-5 Plating or	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	7.000	4.466	70,000		Treated silica	Trade Secret	2.00	
							Heterocyclic organic compou		2.00	
semiconductor device and its homogenous materials cor tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		C (RoHS Directive), EU Directive 2011/65/EU (RoHS		63.800 ective) and wit	1,000,000 h EU	3.61	(mg) Total	Trade Secret Total Chip (Die)	100.00 % of Total Weight	5.66
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem rporated's knowledge and belief as of the date of this doc	nply with EU Directive 2002/95/E0 i internal design controls, suppli nical substance is NOT an intenti ument, there is no credible reaso	al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoHS er declarations, and /or analytical test data. ional ingredient in the semiconductor device and,	S Recast Dire to the best o	ective) and wit	h EU echnology			Total	100.00	5.66
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via themical substance is absent from the list above, the cher	nply with EU Directive 2002/95/Er i internal design controls, suppli nical substance is NOT an intenti ument, there is no credible reaso gulatory scheme world-wide. imability standard for plastics. Y	al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoHS er declarations, and /or analytical test data. ional ingredient in the semiconductor device and, in to believe that the unavoidable impurity concern	S Recast Dire to the best o tration of the	ective) and wit of Microchip Te e chemical sub	h EU echnology		(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight 100	5.66
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via themical substance is absent from the list above, the chen rporated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any r ling compounds used by Microchip meet the UL94 V0 flan	nply with EU Directive 2002/95/Ed internal design controls, suppli nical substance is NOT an intenti ument, there is no credible reaso gulatory scheme world-wide. Imability standard for plastics. Y plastics/	al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoHS er declarations, and /or analytical test data. ional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concent ou can access the UL iQTM family of databases to	S Recast Dire to the best o tration of the o obtain a tes	ective) and wit of Microchip Te e chemical sub st report at	h EU echnology ostance, if	3.61	(mg) Total Doped Silicon	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via themical substance is absent from the list above, the cherr prorated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any r ling compounds used by Microchip meet the UL94 V0 flan //ul.com/global/eng/pages/offerings/industries/chemicals/ protective "tubes" in which the specific product is shippe	nply with EU Directive 2002/95/Ed internal design controls, suppli nical substance is NOT an intenti ment, there is no credible reaso egulatory scheme world-wide. mability standard for plastics. Y plastics/ d are made from polyvinyl chlori in this form concerning substance of its knowledge and belief, as of is been compiled based on the rai a and some information may not arts and the average weight of an	al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoHS er declarations, and /or analytical test data. ional ingredient in the semiconductor device and, in to believe that the unavoidable impurity concent ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to hol es restricted by RoHS in Microchip Technology In f the date listed in this form. Microchip Technology nges provided in Material Safety Data Sheets provi have been provided by subcontract assemblers an iticipated significant toxic metals components. Th	S Recast Dire to the best o tration of the o obtain a tes Id the packin corporated's y Incorporate ided by raw i nd raw matei	ective) and wit of Microchip Te e chemical sub at report at ng slip on the of s semiconduct ed cannot guai material suppliers.	h EU schnology sstance, if outer box and or devices in rantee the iers. Supplier Information	3.61	(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via themical substance is absent from the list above, the chem prorated's knowledge and belief as of the date of this doc: is not below the threshold of regulatory concern for any r ling compounds used by Microchip meet the UL94 V0 flan //ul.com/global/eng/pages/offerings/industries/chemicals/ protective "tubes" in which the specific product is shippe ain "reels" may be made from PVC plastic. oochip Technology Incorporated believes the information i original packing materials is true and correct to the best a pleteness and accuracy of data in this form because it has mation is often protected from disclosure as trade secret: ovided only as estimates of the average weight of these p	nply with EU Directive 2002/95/Ed internal design controls, suppli inical substance is NOT an intenti ment, there is no credible reaso egulatory scheme world-wide. mability standard for plastics. Y plastics/ d are made from polyvinyl chlori in this form concerning substanc of its knowledge and belief, as of is been compiled based on the rai is and some information may not arts and the average weight of an within silicon devices (silicon IC) ranty, express or implied, with re	al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoHS er declarations, and /or analytical test data. ional ingredient in the semiconductor device and, in to believe that the unavoidable impurity concent ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to hol es restricted by RoHS in Microchip Technology Im t the date listed in this form. Microchip Technology nges provided in Material Safety Data Sheets provi have been provided by subcontract assemblers an itclipated significant toxic metals components. Th in the finished parts.	S Recast Dire to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw i nd raw mate nese estimate	ective) and wit of Microchip Te e chemical sub at report at og slip on the of semiconduct ed cannot gua material suppliers. ses do not inclu usive, limited j	h EU echnology sstance, if outer box and or devices in rantee the iers. Supplier Information ide trace product	3.61	(mg) Total Doped Silicon (mg) Total Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via themical substance is absent from the list above, the cherr prorated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any r ling compounds used by Microchip meet the UL94 V0 flan //ul.com/global/eng/pages/offerings/industries/chemicals/ protective "tubes" in which the specific product is shippe ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information i original packing materials is true and correct to the best original packing materials is true and correct to the best pleteness and accuracy of data in this form because it has mation is often protected from disclosure as trade secret ovided only as estimates of the average weight of these p s of dopants, metals, and non-metal materials contained v ochip Technology Incorporated does not provide any war anties provided by Microchip Technology Incorporated ar	nply with EU Directive 2002/95/Ed internal design controls, suppli inical substance is NOT an intenti imment, there is no credible reaso egulatory scheme world-wide. immability standard for plastics. Y plastics/ d are made from polyvinyl chlori in this form concerning substance of its knowledge and belief, as of been compiled based on the rai and some information may not arts and the average weight of an vithin silicon devices (silicon IC) ranty, express or implied, with re d its subsidiaries are contained unges to Material Content Declara	al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoHS er declarations, and /or analytical test data. ional ingredient in the semiconductor device and, in to believe that the unavoidable impurity concent ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to hol es restricted by RoHS in Microchip Technology In f the date listed in this form. Microchip Technology inges provided in Material Safety Data Sheets provi have been provided by subcontract assemblers a inticipated significant toxic metals components. Th in the finished parts. espect to the information provided in this declarati in Microchip's standard terms and conditions of s ations and shall not be liable for any damages, dire	S Recast Dire to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw n nd raw maten nese estimate on. The exclu- iale. These ar ect or indirec	ective) and with of Microchip Tet e chemical sub et report at ing slip on the of a semiconduct ed cannot gual material suppliers. es do not inclu usive, limited re provided in ct, consequent	h EU echnology sstance, if outer box and or devices in rantee the iers. Supplier Information ide trace product Microchip's ial or	0.51	(mg) Total Doped Silicon (mg) Total Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.80

	e Type: QVCF 16	Lead) VQFN 3x3x0.9mm (qv)		ation Base / oper Alloy (C	-		•	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Semiconductor Devic	e Type. QVCL 10("Contained In"	% Total		1					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	12.83	(mg) Total	Mold Compound	% ot Total Weight	50.7
Silica, vitreous (or fused)	60676-86-0	Mold Compound	43.095	10.903	430,950		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.411	1.116	44,109		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.042	0.770	30,420		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.152	0.038	1,521		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	41.540	10.510	415,397			Total	100.00	
Iron	7439-89-6	Lead Frame	1.022	0.259	10,218	11.00	(mg) Total	Lead Frame	% of Total Weight	43.48
Silver	7440-22-4	Lead Frame	0.828	0.210	8,283		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.054	0.014	544		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.036	0.009	359		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.360	0.344	13,600		Zinc	7440-66-6	0.13	
Epoxy Resin	Trade secret	Die Attach	0.340	0.086	3,400		Phosphorous	7723-14-0	0.08	
Doped GaAs	1300-00-00	Chip (Die)	1.340	0.339	13,400			Total		
Doped Gold	7440-57-5	Wire Bond	0.400	0.101	4,000	0.43	(mg) Total	Die Attach	% of Total Weight	1.7
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.380	0.602	23,800		Silver	7440-22-4	80.00	
		TOTALS:	100.000	25.300	1,000,000		Epoxy Resin	Trade secret	20.00	
								Total	100.00	
		g Total Mass 102/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Dire	ctive) and wit	th EU	0.34	(mg) Total	Chip (Die)	% of Total Weight	1.34
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified	comply with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs			-	0.34	(mg) Total Doped GaAs	Chip (Die) 1300-00-00 Total	100	1.34
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) apliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ting compounds used by Microchip meet the UL94 V0 fl	comply with EU Directive 20 via internal design controls hemical substance is NOT a locument, there is no credib ny regulatory scheme world- lammability standard for pla	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	to the best o stration of the	Microchip Te	echnology	0.34		1300-00-00	100	0.4
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this d i, is not below the threshold of regulatory concern for an Iding compounds used by Microchip meet the UL94 V0 fi 3/Jul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship	comply with EU Directive 20 via internal design controls hemical substance is NOT a locument, there is no credib ny regulatory scheme world- lammability standard for pla als/plastics/	02995/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide.	to the best o tration of the o obtain a test	Microchip To chemical sub report at	echnology ostance, if		Doped GaAs	1300-00-00 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cf orporated's knowledge and belief as of the date of this d <i>i</i> , is not below the threshold of regulatory concern for an lding compounds used by Microchip meet the UL94 V0 fi p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship d certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatio heir original packing materials is true and correct to the completeness and accuracy of data in this form becaus, oplier information is often protected from disclosure as to mation is provided only as estimates of the average we	comply with EU Directive 20 via internal design controls hemical substance is NOT a locument, there is no credib ity regulatory scheme world- lammability standard for pla als/plastics/ opped are made from polyvin on in this form concerning s best of its knowledge and b e it has been compiled base trade secrets and some info	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH is, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In belief, as of the date listed in this form. Microchip Technology in mation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	to the best o stration of the o obtain a tes d the packin corporated's ogy Incorpora provided by ra emblers and r	Microchip Te chemical sub report at g slip on the o semiconduct tted cannot g w material s aw material s	echnology ostance, if outer box or devices uarantee uppliers. uppliers.		Doped GaAs (mg) Total	1300-00-00 Total Wire Bond	100 100.00 % of Total Weight 100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cf orporated's knowledge and belief as of the date of this d i, is not below the threshold of regulatory concern for an lding compounds used by Microchip meet the UL94 V0 f p://ul.com/global/eng/pages/offerings/industries/chemica a protective "tubes" in which the specific product is ship d certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatio heir original packing materials is true and correct to the completeness and accuracy of data in this form becaus oplier information is often protected from disclosure as to ormation is provided only as estimates of the average we lude trace levels of dopants, metals, and non-metal mate crochip Technology Incorporated does not provide any w	comply with EU Directive 20 via internal design controls hemical substance is NOT a locument, there is no credib ny regulatory scheme world- lammability standard for pla als/plastics/ oped are made from polyvin on in this form concerning s best of its knowledge and b e it has been compiled base trade secrets and some info eight of these parts and the erials contained within silico varranty, express or implied a and its subsidiaries are co	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH is, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In belief, as of the date listed in this form. Microchip Technology in mation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	to the best o htration of the o obtain a test odd the packin icorporated's ogy Incorpora orovided by ar mblers and r nponents. Th	Microchip Tr chemical sub report at g slip on the o semiconduct ated cannot g ww material su aw material su asse estimates sese estimates	echnology ostance, if outer box or devices uarantee uppliers. is do not		Doped GaAs (mg) Total Doped Gold	1300-00-00 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
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Semiconductor Device Type: 24 VGN 4x4x0.9 m/s Calitation in Voir Total and Voir Tota					ination Base opper Alloy (•	mogeneous Materials: (e.g. pc boards, displays)		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Solutance CAS Number Sub-Component Weight Regist	Semiconductor Devic	e type. 24 Val IN 474		W Lotal							
Bioser Neam Table Sevent Mod Combond 2432 1588 2437 Cooper 1498 05-3 Lead Frame 6334 1378 66354 1070 1688 60cc 630 Inn 748 08-5 Lead Frame 1583 1578 2437 7 6435 1578 2437 1788 643 1789 6435 1789 6435 1789 6435 1789 6435 1789 6435 1789 6435 1789 6435 1789 6435 1789 6435 1789 6435 6534 1789 6435 6534 1789 6435 6534 1789 6435 6534 1789 6435 6534 1789 6435 6534 1789 6435 6534 1789 6435 6534 1789 6435 1789 6435 1789 6435 6534 1789 6435 1789 6435 1789 1789 1789 1789 1789 1789 1789 1789 1789	Basic Substance	CAS Number			mg/part	ppm	18.03	(mg) Total	Mold Compound	% ot Total Weight	27.95
Private Total Total <thtota< th=""> Total Total <th< td=""><td>Silica, vitreous (or fused)</td><td>60676-86-0</td><td>Mold Compound</td><td>23.758</td><td>15.324</td><td>237,575</td><td></td><td>Silica, vitreous (or fused)</td><td>60676-86-0</td><td>85.00</td><td></td></th<></thtota<>	Silica, vitreous (or fused)	60676-86-0	Mold Compound	23.758	15.324	237,575		Silica, vitreous (or fused)	60676-86-0	85.00	
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his semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive). EU Directive 2011/95/EU (RoHS Recast Directive) and with EU irrective 2002/95/EC (End-of-Life Vehicles (ELV) Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology corporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if y is not below the thershold of regulatory concerns for any regulatory scheme world wide. Iologing compounds used by Microchip meet the UL94 V0 fimmability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at trp://Lic.org/globale/glages/offerings/ndustries/chemicals/plastics/ the protective "tubes" in which the specific product is shipped are made from polyvinyl chorldre (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and retrain "reles" may be made from PVC plastic. Total 100.00 1				100.000	64.500	1,000,000			Total	100.00	
his semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive). EU Directive 2011/95/EU (RoHS Recast Directive) and with EU irrective 2002/95/EC (End-of-Life Vehicles (ELV) Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology corporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if y is not below the thershold of regulatory concerns for any regulatory scheme world wide. Iologing compounds used by Microchip meet the UL94 V0 fimmability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at trp://Lic.org/globale/glages/offerings/ndustries/chemicals/plastics/ the protective "tubes" in which the specific product is shipped are made from polyvinyl chorldre (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and retrain "reles" may be made from PVC plastic. Total 100.00 1		0.0645	g Total Mass				1.88	(mg) Total	Chip (Die)	% of Total Weight	2.91
corporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if y, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Joiling compounds used by Mircochip meet the ULS4 V0 immability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at tp://u.com/globaleng/pages/offerings/industries/chemicals/plastics/ the protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and train "reles" may be made from PVC plastic. creachip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated's semiconductor devices in inording and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers. These estimates do not include trace rele of dopants, metals, and non-metal materials contained within silicon devices (slicion IC) in the finished parts. creachip Technology Incorporated does not provide and tis subsidiaries are contained in Microchip's standard terms and coulditions of sale. These are provided in Material Suppliers. Information provided ob Microchip Technology Incorporated does not provide and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's tortain segrovided by Microchip sets to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or this Certificate of Compilance for semiconductor products. Mith Train Treles in the prestric for semiconductor product	ompliance with the above EU Directives has been verifier										
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Prealadum 7440-05-3 2.00 Palladum 7440-05-3 2.00 Palladum 7440-05-3 2.00	a chemical substance is absent from the list above, the c corporated's knowledge and belief as of the date of this c	hemical substance is NOT a document, there is no credib	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen				0.21	(mg) Total			
licrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in heir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the ompleteness and accuracy of data in this form been complied based on the ranges provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information provided to materials suppliers, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Incrochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product arranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's - Matte Tin / annealed at 150°C for 1 hour % of Total Weight 1.22 Licrochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or third party test reports (SGS) or f this Certificate of Compliance for semiconductor products.	a chemical substance is absent from the list above, the ci corporated's knowledge and belief as of the date of this c vy, is not below the threshold of regulatory concern for ar olding compounds used by Microchip meet the UL94 V0 f	hemical substance is NOT a document, there is no credib ny regulatory scheme world flammability standard for pla	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide.	tration of the	chemical sul		0.21		Wire Bond	% of Total Weight	
earranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's 0.79 (mg) Total - Matte Tin / annealed at 150°C % of Total Weight 1.22 uotations, sales order acknowledgement, and invoices.	a chemical substance is absent from the list above, the ci corporated's knowledge and belief as of the date of this c ny, is not below the threshold of regulatory concern for ar olding compounds used by Microchip meet the UL94 V0 f tp://ul.com/global/eng/pages/offerings/industries/chemic ne protective "tubes" in which the specific product is ship	chemical substance is NOT a document, there is no credib ny regulatory scheme world flammability standard for pla als/plastics/	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. astics. You can access the UL iQTM family of databases to	tration of the	chemical sul	ostance, if	0.21	Copper	Wire Bond 7440-50-8 7440-05-3	% of Total Weight 98.00 2.00	
therwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5 100.00 f this Certificate of Compliance for semiconductor products.	a chemical substance is absent from the list above, the ci corporated's knowledge and belief as of the date of this c vy, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 f tp://ul.com/global/eng/pages/offerings/industries/chemici ne protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatic eir original packing materials is true and correct to the be sompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade see provided only as estimates of the average weight of thes	hemical substance is NOT a document, there is no credit ny regulatory scheme world flammability standard for pla als/plastics/ pped are made from polyvin on in this form concerning s est of its knowledge and bell has been compiled based o crets and some information i se parts and the average wei	In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technolog n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ght of anticipated significant toxic metals components. TI	tration of the o obtain a test ld the packin corporated's y Incorporate ided by raw n nd raw mater	chemical sub t report at g slip on the o semiconduct d cannot gua naterial suppl ial suppliers.	ostance, if outer box and or devices in rantee the iers. Supplier Information	0.21	Copper	Wire Bond 7440-50-8 7440-05-3	% of Total Weight 98.00 2.00	
Total 100.00	a chemical substance is absent from the list above, the ci- corporated's knowledge and belief as of the date of this ci- yy, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 if tp://ul.com/global/eng/pages/offerings/industries/chemic- ne protective "tubes" in which the specific product is ship ertain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatic eir original packing materials is true and correct to the be ompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade sec provided only as estimates of the average weight of thes vels of dopants, metals, and non-metal materials contain icrochip Technology Incorporated does not provide any v arranties provided by Microchip Technology Incorporate	hemical substance is NOT a document, there is no credit ny regulatory scheme world flammability standard for pla als/plastics/ pped are made from polyvin on in this form concerning s est of its knowledge and beli has been compiled based o rets and some information i se parts and the average wei ed within silicon devices (sil warranty, express or implied	In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technolog n the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a ght of anticipated significant toxic metals components. TI licon IC) in the finished parts.	tration of the o obtain a test ld the packin corporated's y Incorporate ided by raw m nd raw mater nese estimate	chemical sul t report at g slip on the of semiconduct d cannot gua naterial suppliers. Is do not inclu	ostance, if outer box and or devices in rantee the liers. Supplier Information Jde trace product		Copper Palladium	Wire Bond 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C	% of Total Weight 98.00 2.00 100.00	0.33
	a chemical substance is absent from the list above, the ci corporated's knowledge and belief as of the date of this ci y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 f tp://ul.com/global/eng/pages/offerings/industries/chemica ne protective "tubes" in which the specific product is ship train "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatic eir original packing materials is true and correct to the be mapleteness and accuracy of data in this form because it formation is often protected from disclosure as trade sec provided only as estimates of the average weight of thes vels of dopants, metals, and non-metal materials contain icrochip Technology Incorporated does not provide any v arranties provided by Microchip Technology Incorporated jotations, sales order acknowledgement, and invoices.	hemical substance is NOT a document, there is no credit ny regulatory scheme world flammability standard for pl: als/plastics/ pped are made from polyvin on in this form concerning s est of its knowledge and bell has been compiled based o rets and some information i se parts and the average wei ed within silicon devices (si warranty, express or implied d and its subsidiaries are co changes to Material Conten the users' reliance on the inf	In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In fer, as of the date listed in this form. Microchip Technology In n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ght of anticipated significant toxic metals components. Th licon IC) in the finished parts. I, with respect to the information provided in this declaration ntained in Microchip's standard terms and conditions of s t Declarations and shall not be liable for any damages, dir	tration of the o obtain a test ld the packin corporated's y Incorporate ided by raw n nd raw mater nese estimate ion. The exclu iale. These an ect or indirec	chemical sub t report at g slip on the o semiconduct d cannot gua naterial suppli ial suppliers. is do not inclu usive, limited e provided in t, consequen	ostance, if outer box and or devices in rantee the iers. Supplier Information Ide trace product Microchip's tial or		Copper Palladium (mg) Total	Wire Bond 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 98.00 2.00 100.00 % of Total Weight	0.33

MICROCHIP Semiconductor	Device Type: DZK 28 VG	QFN 5x5x0.9mm (RW/RL)		nation Base / pper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
	0101	"Contained In"	% lotal			32.24	(mg) Total	Mold Compound	% ot Total Weight	48.78
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm				-	-
Silica, vitreous (or fused)	60676-86-0	Mold Compound	41.463	27.407	414,630		Silica, vitreous (or fused)	60676-86-0	85.0000	
Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	Mold Compound Mold Compound	4.244 2.927	2.805 1.935	42,439 29,268		Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	8.7000	
Carbon Black	1333-86-4	Mold Compound Mold Compound	0.146	0.097	29,200		Carbon Black	1333-86-4	0.3000	
Carbon Black	7440-50-8	Lead Frame	36.476	24.111	364,762		Calbon Black	Total	100.00	1
Iron	7440-50-8	Lead Frame	0.897	0.593	8.972	25.24	(mg) Total	Lead Frame	% of Total Weight	
	7440-22-4				- / -	25.24				38.18
Silver Zinc	7440-22-4 7440-66-6	Lead Frame Lead Frame	0.727	0.481	7,273		Copper	7440-50-8 7439-89-6	95.54 2.35	
	7723-14-0	Lead Frame	0.048	0.032	315		Iron Silver	7439-89-6 7440-22-4	2.35	
Phosphorous Silver	7440-22-4	Die Attach	0.930	0.615	9,300		Zinc	7440-22-4	0.13	
Epoxy resin	68475-94-5	Die Attach	0.930	0.615	9,300		Phosphorous	7440-00-0	0.08	
Copper(II) oxide	1317-38-0	Die Attach	0.050	0.033	496		FIIOSPIIOIOUS	Total	100.00	1
Silicon	7440-21-3	Chip (Die)	6.770	4.475	67.700					
	7440-21-3	- 1 (-)		4.475	- /	0.82	(mg) Total	Die Attach	% of Total Weight	1.24
Copper		Wire Bond Copper palladium coated (CuPd)	0.737		7,369		Silver	7440-22-4	75.00	
Palladium	7440-05-3 7440-31-5	Wire Bond Copper palladium coated (CuPd)	0.013 4.280	0.009	131 42.800		Epoxy resin	68475-94-5	21.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280				Copper(II) oxide	1317-38-0	4.00	1
		TOTALS:	100.000	66.100	1,000,000	4.47		Total	100.00	
	aterials comply with EU Directive	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	tive) and with	h EU	4.47	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	6.77
ective 2002/53/EC (End-of-Life Vehicles (ELV) Dir	···· ,	ols, supplier declarations, and /or analytical test data.						Total	100.00	<u> </u>
-		an intentional ingredient in the semiconductor device and,			L			TOLA		
			to the best of	Microchip Te	chnology			Wire Bond	100100	
orporated's knowledge and belief as of the date of		ible reason to believe that the unavoidable impurity concer				0.50	(mg) Total	Wire Bond Copper palladium coated (CuPd)	% of Total Weight	
orporated's knowledge and belief as of the date of r, is not below the threshold of regulatory concer Iding compounds used by Microchip meet the UI	rn for any regulatory scheme worl L94 V0 flammability standard for p	ible reason to believe that the unavoidable impurity concer	tration of the	chemical sub		0.50	(mg) Total Copper	Copper palladium		
corporated's knowledge and belief as of the date of y, is not below the threshold of regulatory concer olding compounds used by Microchip meet the UI tp://ul.com/global/eng/pages/offerings/industries/or	rn for any regulatory scheme worl L94 V0 flammability standard for p chemicals/plastics/	ible reason to believe that the unavoidable impurity concerned d-wide.	tration of the	chemical sub	stance, if	0.50		Copper palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 98 2	. 0.75
corporated's knowledge and belief as of the date of y, is not below the threshold of regulatory concer- olding compounds used by Microchip meet the UI tp://ul.com/global/eng/pages/offerings/industries/ te protective "tubes" in which the specific produc rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the inf eir original packing materials is true and correct to mpleteness and accuracy of data in this form bec formation is often protected from disclosure as tr	rn for any regulatory scheme worl L94 V0 flammability standard for p chemicals/plastics/ at is shipped are made from polyvi formation in this form concerning o the best of its knowledge and b cause it has been compiled based ade secrets and some informatior f these parts and the average weig	ible reason to believe that the unavoidable impurity concerned- d-wide. plastics. You can access the UL iQTM family of databases to inyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov nay not have been provided by subcontract assemblers a sht of anticipated significant toxic metals components. The	tration of the o obtain a test Id the packing corporated's a y Incorporated ided by raw m nd raw materi	chemical sub report at slip on the o semiconducto I cannot guar aterial suppli al suppliers. I	stance, if outer box and or devices in rantee the ers. Supplier information is	0.50	Copper	Copper palladium coated (CuPd) 7440-50-8	% of Total Weight	. 0.75
corporated's knowledge and belief as of the date of y, is not below the threshold of regulatory concer- olding compounds used by Microchip meet the UI tp://ul.com/global/eng/pages/offerings/industries/ e protective "tubes" in which the specific produc- train "reels" may be made from PVC plastic. crochip Technology Incorporated believes the inf eir original packing materials is true and correct to mpleteness and accuracy of data in this form bec- formation is often protected from disclosure as tri ovided only as estimates of the average weight of dopants, metals, and non-metal materials contair crochip Technology Incorporated does not provic arranties provided by Microchip Technology Incor totations, sales order acknowledgement, and invo	rn for any regulatory scheme worl L94 V0 flammability standard for p chemicals/plastics/ et is shipped are made from polyvi formation in this form concerning o the best of its knowledge and be cause it has been compiled based ade secrets and some informatior f these parts and the average weig ned within silicon devices (silicon de any warranty, express or implie rporated and its subsidiaries are c bices.	ible reason to believe that the unavoidable impurity concerned- d-wide. Dastics. You can access the UL iQTM family of databases to invol chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a pht of anticipated significant toxic metals components. The IC) in the finished parts. ed, with respect to the information provided in this declaration ontained in Microchip's standard terms and conditions of standard terms and condit	tration of the o obtain a test Id the packing corporated's : y Incorporated ided by raw m nd raw materi se estimates d on. The exclu: ale. These are	chemical sub report at slip on the o semiconducto d cannot guar aterial suppli al suppliers. I o not include sive, limited p provided in I	stance, if uter box and or devices in antee the ers. Supplier Information is trace levels product Microchip's	2.83	Copper Palladium	Copper palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 98 2	. 0.75
proprated's knowledge and belief as of the date of is not below the threshold of regulatory concer ding compounds used by Microchip meet the UI s://ul.com/global/eng/pages/offerings/industries/or protective "tubes" in which the specific produc tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the infi r original packing materials is true and correct to npleteness and accuracy of data in this form bec rimation is often protected from disclosure as tri vided only as estimates of the average weight of lopants, metals, and non-metal materials contair rochip Technology Incorporated does not provic ranties provided by Microchip Technology Incor rations, sales order acknowledgement, and invo rochip disclaims any duty to notify users of updi	rn for any regulatory scheme worl L94 V0 flammability standard for p chemicals/plastics/ at is shipped are made from polyvi formation in this form concerning o the best of its knowledge and b cause it has been compiled based ade secrets and some informatior f these parts and the average weig ned within silicon devices (silicon de any warranty, express or implie prorated and its subsidiaries are c bices. lates or changes to Material Conte suit of the users' reliance on the i	ible reason to believe that the unavoidable impurity concerned- d-wide. Dastics. You can access the UL iQTM family of databases to inyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov a may not have been provided by subcontract assemblers a pht of anticipated significant toxic metals components. The IC) in the finished parts.	tration of the o obtain a test Id the packing corporated's a y Incorporated ided by raw m and raw materi se estimates d on. The exclua- ale. These are ect or indirect	chemical sub report at slip on the o semiconducto I cannot guar aterial suppli al suppliers. I o not include sive, limited p provided in I , consequenti	stance, if uter box and or devices in antee the ers. Supplier information is trace levels product Microchip's ial or		Copper Palladium	Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	% of Total Weight 98 2 100.00 % of Total Weight 100.00	: 0.75 : 4.28
rporated's knowledge and belief as of the date of is not below the threshold of regulatory concer ling compounds used by Microchip meet the UI //ul.com/global/eng/pages/offerings/industries// protective "tubes" in which the specific produc- ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the inf original packing materials is true and correct to pleteness and accuracy of data in this form bec- mation is often protected from disclosure as tr ided only as estimates of the average weight of opants, metals, and non-metal materials contair ochip Technology Incorporated does not provic anties provided by Microchip Technology Incor ations, sales order acknowledgement, and invo ochip disclaims any duty to notify users of upd. rwise, suffered by users or third parties as a re	rn for any regulatory scheme worl L94 V0 flammability standard for p chemicals/plastics/ at is shipped are made from polyvi formation in this form concerning o the best of its knowledge and b cause it has been compiled based ade secrets and some informatior f these parts and the average weig ned within silicon devices (silicon de any warranty, express or implie prorated and its subsidiaries are c bices. lates or changes to Material Conte suit of the users' reliance on the i	ible reason to believe that the unavoidable impurity concerned- d-wide. Dastics. You can access the UL iQTM family of databases to inyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. ed, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s ant Declarations and shall not be liable for any damages, dir	tration of the o obtain a test Id the packing corporated's a y Incorporated ided by raw m and raw materi se estimates d on. The exclua- ale. These are ect or indirect	chemical sub report at slip on the o semiconducto I cannot guar aterial suppli al suppliers. I o not include sive, limited p provided in I , consequenti	stance, if uter box and or devices in antee the ers. Supplier information is trace levels product Microchip's ial or		Copper Palladium (mg) Total	Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 98 2 100.00 % of Total Weight	: 0.75 : 4.28

		5x5x0.9 (MW)		nination Bas Copper Alloy				Homogeneous Materials ics (e.g. pc boards, displ		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device		"Contained In"	% Total	1				1		e4
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	39.52	(mg) Total	Mold Compound	% ot Total Weight	40.57
Silica Fused	60676-86-0	Mold Compound	35.438	34.517	354,379		Silica Fused	60676-86-0	87.35	
Epoxy Resin	Trade Secret	Mold Compound	2.085	2.031	20,853	1	Epoxy Resin	Trade Secret	5.14	
Metal Hydroxide	Trade Secret	Mold Compound	1.250	1.217	12,496		Metal Hydroxide	Trade Secret	3.08	
Phenol Resin	Trade Secret	Mold Compound	0.836	0.814	8,357		Phenol Resin	Trade Secret	2.06	
Phenol Novolac	9003-35-4	Mold Compound	0.836	0.814	8,357		Phenol Novolac	9003-35-4	2.06	
Carbon Black	1333-86-4	Mold Compound	0.126	0.122	1,258		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	50.721	49.402	507,209			Total	100.00	
Iron	7439-89-6	Lead Frame	1.248	1.215	12,476	51.71	(mg) Total	Lead Frame	% of Total Weight	53.09
Silver	7440-22-4	Lead Frame	1.011	0.985	10,114	4	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.066	0.065	664	4	Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.044	0.043	438	-	Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach Die Attach	0.560	0.545	5,600	-	Zinc	7440-66-6 7723-14-0	0.13	
Epoxy Resin	Trade Secret				1,400 33.000	-	Phosphorous	Total	0.08	l
Silicon Gold	7440-21-3 7440-57-5	Chip (Die) Wire Bond	3.300 0.500	3.214 0.487	5,000	0.68			% of Total Weight	0.7
						0.68	(mg) Total	Die Attach		0.7
Nickel Palladium	7440-02-0 7440-05-3	Plating on external leads (pins) Plating on external leads (pins)	1.656	1.613	<u>16,560</u> 920	-	Silver	7440-22-4 Trade Secret	80 20	
Gold	7440-57-5	Plating on external leads (pins)	0.092	0.090	920	-	Epoxy Resin	Tade Secret	100.00	J
Gold	7440-57-5		100.092	97.400	1,000,000	3.21	Total (mg)	Chip (Die)	% of Total Weight	3.3
	0.0074	TOTALS:	100.000	57.400	1,000,000	3.21				3.3
	0.0974 g 1						Doped Silicon	7440-21-3	100	
is semiconductor device and its homogenous th EU Directive 2002/53/EC (End-of-Life Vehicl	••	rective 2002/95/EC (RoHS Directive), EU Directive	e 2011/65/EU (F	RoHS Recast	Directive) and			Total	100.00	
ompliance with the above EU Directives has be	een verified via internal desig	n controls, supplier declarations, and /or analytic	cal test data.			0.49	(mg) Total	Wire Bond	% of Total Weight	0.5
	f as of the date of this docum	e is NOT an intentional ingredient in the semicon nent, there is no credible reason to believe that th for any regulatory scheme world-wide.					Gold	7440-57-5	100.00	
olding compounds used by Microchip meet the tp://ul.com/global/eng/pages/offerings/industri		ard for plastics. You can access the UL iQTM fan	nily of database	es to obtain a	test report at			Total	100.00	1
he protective "tubes" in which the specific produter box and certain "reels" may be made from		m polyvinyl chloride (PVC) plastic. "Window enve	elopes" used to	o hold the pac	king slip on the	1.79	(mg) Total	Plating on external leads (pins)	% of Total Weight	1.84
emiconductor devices in their original packing echnology Incorporated cannot guarantee the afety Data Sheets provided by raw material sup ovided by subcontract assemblers and raw ma	materials is true and correct completeness and accuracy opliers. Supplier information aterial suppliers. Information	cerning substances restricted by RoHS in Micro to the best of its knowledge and belief, as of the of data in this form because it has been compiled s often protected from disclosure as trade secre is provided only as estimates of the average wei ude trace levels of dopants, metals, and non-met	date listed in the d based on the its and some in ght of these pa	his form. Micr ranges provi formation ma rts and the a	ochip ded in Material y not have been verage weight of		Nickel	7440-02-0	90.00	
oduct warranties provided by Microchip Techr ovided in Microchip's quotations, sales order a	nology Incorporated and its s acknowledgement, and invoid	or implied, with respect to the information provid ubsidiaries are contained in Microchip's standar ces. al Content Declarations and shall not be liable fo	d terms and co	nditions of sa	ale. These are		Palladium	7440-05-3	5.00	
	r third parties as a result of th	ne users' reliance on the information in Material (Gold	7440-57-5	5.00	
	•	-				1		Total	100.00	

100

100.00

Total

97.40

MICROCHIP Semiconductor Device	e Type: EZK 32 \	/QFN 5x5x0.9 (RN)		nation Base A pper Alloy (C			Package Ho	mogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	18.20	(mg) Total	Mold Compound	% ot Total Weight	28.62
Silica, vitreous (or fused)	60676-86-0	Mold Compound	24.327	15.472	243.270		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	2.490	1.584	24,899		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	1.717	1.092	17,172		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.086	0.055	859		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	62,166	39.538	621,663		Subbit Black	Total	100.00	
Iron	7439-89-6	Lead Frame	1.529	0.973	15,291	41.38	(mg) Total	Lead Frame	% of Total Weight	65.07
Silver	7439-89-6	Lead Frame	1.240	0.788	12.396	41.30	Copper	7440-50-8	95.54	03.07
Zinc	7440-22-4	Lead Frame	0.081	0.052	813		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.081	0.032	537		Silver	7439-89-6	1.91	
	7440-22-4									
Silver		Die Attach	0.363	0.231	3,626		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.098	0.062	980		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.015	0.009	147			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.015	0.009	147	0.31	(mg) Total	Die Attach	% of Total Weight	0.49
Silicon	7440-21-3	Chip (Die)	2.410	1.533	24,100		Silver	7440-22-4	74	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.648	0.412	6,485		Epoxy resin	Trade Secret	20	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.012	0.007	116		Metal oxide	Trade Secret	3	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.750	1.749	27,500		Gamma-butyrolactone	96-48-0	3	
		TOTALS:	100.000	63.600	1,000,000			Total	100.00	
	0.0636 (g Total Mass				1.53	Total (mg)	Chip (Die)	% of Total Weight	2.41
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ctive) and with	EU		Doped Silicon	7440-21-3 Total	100	
	chemical substance is NOT a document, there is no credit	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concert				0.42	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.66
lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic		astics. You can access the UL iQTM family of databases t	o obtain a tes	t report at			Copper	7440-50-8	98	
he protective "tubes" in which the specific product is shi	pped are made from polyvir	yl chloride (PVC) plastic. "Window envelopes" used to he	old the packin	g slip on the o	outer box		Palladium	7440-05-3	2	
nd certain "reels" may be made from PVC plastic.										
nd certain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informatit their original packing materials is true and correct to the ompleteness and accuracy of data in this form because it upplier information is often protected from disclosure as nformation is provided only as estimates of the average w clude trace levels of dopants, metals, and non-metal mat	best of its knowledge and l has been compiled based o trade secrets and some info reight of these parts and the	belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets pro- ormation may not have been provided by subcontract asse average weight of anticipated significant toxic metals co	logy Incorpor vided by raw r emblers and r	ated cannot g naterial suppl aw material su	uarantee the ers. ppliers.			Total	100.00	
licrochip Technology Incorporated believes the informatic n their original packing materials is true and correct to the ompleteness and accuracy of data in this form because it upplier information is often protected from disclosure as nformation is provided only as estimates of the average w	e best of its knowledge and I has been compiled based o trade secrets and some info eight of these parts and the erials contained within silic warranty, express or implied	belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets pro- ormation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con on devices (silicon IC) in the finished parts. d, with respect to the information provided in this declarat	logy Incorpor vided by raw r emblers and r mponents. Th tion. The exclu	ated cannot g naterial suppl aw material su ese estimates usive, limited	uarantee the ers. ppliers. do not product	1.75	(mg) Total	Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight	2.75
licrochip Technology Incorporated believes the information their original packing materials is true and correct to the ompleteness and accuracy of data in this form because it upplier information is often protected from disclosure as information is provided only as estimates of the average w nclude trace levels of dopants, metals, and non-metal mat licrochip Technology Incorporated does not provide any farranties provided by Microchip Technology Incorporated	best of its knowledge and I has been compiled based o trade secrets and some info reight of these parts and the erials contained within silic warranty, express or implied d and its subsidiaries are co changes to Material Conten the users' reliance on the init	belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets pro- ormation may not have been provided by subcontract asso average weight of anticipated significant toxic metals co- on devices (silicon IC) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of at Declarations and shall not be liable for any damages, di	ology Incorpor vided by raw r emblers and r mponents. Th tion. The exclusion sale. These an rect or indirect	ated cannot g naterial suppl aw material su ese estimates usive, limited re provided in ct, consequent	uarantee the ers. ppliers. do not product Microchip's ial or	1.75	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1		2.75
icrochip Technology Incorporated believes the information their original packing materials is true and correct to the ompleteness and accuracy of data in this form because it pipiler information is often protected from disclosure as formation is provided only as estimates of the average we clude trace levels of dopants, metals, and non-metal matic icrochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporated totations, sales order acknowledgement, and invoices. icrochip disclaims any duty to notify users of updates or herwise, suffered by users or third parties as a result of f	best of its knowledge and I has been compiled based o trade secrets and some info reight of these parts and the erials contained within silic warranty, express or implied d and its subsidiaries are co changes to Material Conten the users' reliance on the init	belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets pro- ormation may not have been provided by subcontract asso average weight of anticipated significant toxic metals co- on devices (silicon IC) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of at Declarations and shall not be liable for any damages, di	ology Incorpor vided by raw r emblers and r mponents. Th tion. The exclusion sale. These an rect or indirect	ated cannot g naterial suppl aw material su ese estimates usive, limited re provided in ct, consequent	uarantee the ers. ppliers. do not product Microchip's ial or	1.75		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.75

"Contained In" % I otal		ce Type: AEZC 36 (Lead) VQFN 6x6x0.9 (RP/RQ)		ination Base opper Alloy (•	ogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Sites verses (ar Land) 00079-86-0 Mold Compound 14/73 72 72 74 74 75 75 Bites verses (ar Land) Trade Sector Mold Compound 1000 2271 1000 Export Rein Trade Sector 600 2001 10000			"Contained In"		malaart		26.10	(mg) Total	Mold Compound	% ot Total Weight	17.33
Encode Near Trade Society Model Compound 1.068 2.271 15.077 Prenutice Read Trade Society Model Compound 1.068 2.271 15.077 Control Bank Trade Society Model Compound 1.068 2.271 15.077 Model Compound Trade Society Model Compound 1.068 2.271 15.077 Model Compound Trade Society Model Compound 1.723 108.991 2.2010 Model Compound Trade Society Model Compound 1.723 2.691 1.000 Model Compound Trade Society Model Compound 1.726 1.620				•				Cilian vitanava (an funa di	00070 00 0	05.00	
Private Ratin Task Steer Mold Compound 1.040 1.056 10.38 Private Ratio Task Steer 6.00 Other 1753-856 Lask Frame 1.777 2.077 7.778 16.00 100.00											
Cathon Bink 1333-89-4 Mold Compound 0.052 0.078 630 Late / Frame 1333-89-4 0.90 100 7420-80-5 Late / Frame 7.22,119 17.17 7.22,119 17.40 10.00 <td></td>											
Copper 7449:508 Luss Triane 72.322 100.50 Total Total Total 30 wr 7449:524 Luss Triane 1.72 2.572 114.00 mg Total 86 Total <											
Inio 7439 89.6 Lasd Frame 1.770 26.76 17.700 114.00 Image matrix Lead Frame 5.97 7.770 14.26 Image matrix Lead Frame 5.97 7.770 14.26 Image matrix Lead Frame 5.97 7.770 14.26 Image matrix Lead Frame 5.97 17.770 14.26 Image matrix 17.26 17.26 Image matrix 17.26 <								Galbon Blask			
Shur7440-22-4Lead Frame1.4422.17214.421Zoc7440-52-4Lead Frame0.0560.143446Photophorus7723-14.3Lead Frame0.0560.054626Dow resinTrade StericDisk Athol0.0560.054626Sillion7440-52-3Chp (Dis)4.2106.34042.100Copper7440-57-5Wire Bord0.0560.022176Paladum7440-57-5Wire Bord0.7641.1517.644Paladum7440-65-3Pary on atomat used (par). Usen in avoided at 100°C tor 1 tar0.05800.022176To7440-57-5Pary on atomat used (par). Usen in avoided at 100°C tor 1 tar0.0680100.000Octoor0.1506 gTotalTotal146Option 100, 100, 100, 100, 100, 100, 100, 100							114.00	(mg) Total			75.7
Znc7440-06-6Lead Frame0.0050.143946Sher7763-164Lead Frame0.0064625Sher7763-164Lead Frame0.01640.2161.425Sher7763-164De Attach0.1430.2161.425Sher7763-164Other (169)4.2700.2304210Copper7740-02-5Wire Bond0.0760.1781.1517.761-164Tin7440-02-5Wire Bond0.0760.1781.1517.7610.02Tin7440-21-5Plangam0.1660.023156Sher7.440-22-41.500TotalTotal0.1660.023156Sher7.440-22-31.0001.000State7.440-21-31.0001.150.0001.500.001.500.001.500.001.500.001.500.001.0001.0001.000Total1.0001.0001.0001.0001.0001.0001.0001.0001.0001.000State1.0001.0001.0001.0001.0001.0001.0001.0001.0001.0101.0001.0001.0001.0001.0001.0001.0001.0001.0001.0101.0101.0001.0101.0001.0001.0001.0001.0001.0001.0101.0101.0101.0101.0001.0101.0001.0101.0001.0101.01001.01001.01001.01001.	Silver	7440-22-4	Lead Frame	1.442	2,172	14.421			7440-50-8		
PhosphorusT72314-0Lead Frame0.020.054625Silver7440224Die Attach0.1430.2151.425Ecovy resinTrado SecretDie Attach0.0440.0214.76Coport7440753Wins Bord0.7640.7724.76Tim7440315Putge networkshop1.7000.0231.66ToTALSTotal1.7000.0231.660.0721.66Silver74402449.7021.7000.0231.66ToTALSTotal Mass1.7000.0231.660.0231.704Silver0.1506G Total Mass1.7000.0231.660.0231.704Silver0.1506G Total Mass1.7001.6001.7001.6001.700Silver0.1506G Total Mass1.7001.740-21-31001.700semiconductor device and its homogenous materials comply with EU Directive 2002/SIGE (RoHS Directive). EU Directive and, to the bast of Microchip Technology1.17(mg) TotalVier Bond% of Total Weight4.21Silver1.7001.740-21-31.001.7001.717(mg) TotalVier Bond% of Total Weight0.73opticative in which the specific product is shipped are made from polyviny chorelsNor orable states in unvoidable input vier concentration of the chernical substance, if any regulatory states in which the specific product is shipped are made from polyviny chorels1.17(mg) TotalWire Bond% of Total Weight0.73optic											
Epoly rean Trade Secret Die Attach Viel Text Tota Tota <thtota< th=""> Tota <thtota< th=""></thtota<></thtota<>	Phosphorous	7723-14-0	Lead Frame	0.062	0.094			Silver	7440-22-4		
Silon 7440213 Chip (Dib) 4210 6.340 42.100 Total Total Total 100.00 Pilladum 7440255 Wine Bond 0.764 1.551 7.644 0.25 Bit Attach 5.00 1.010 0.19 2.00 100.00	Silver	7440-22-4	Die Attach	0.143	0.215	1,425		Zinc	7440-66-6	0.13	
Copper 744057-5 Wire Bond 0.764 1.151 7.644 0.29 (mg) Total De Attach % of Total Weight 0.19 Tin 744057-3 Wire Bond 0.016 0.023 156 Shere 744024-75.00 724024-75.00 Epoy sein Tade \$20.00 Toda 100.00 Toda	Epoxy resin		Die Attach					Phosphorous	7723-14-0	0.08	
Pailadum 7440-05-3 W/re Bond 0.016 0.023 156 Tin 7440-23-15 Pailago mesenaral lates (prev). Matte Tin / ammeted at 190°C tor 1 hour 156 175,00 2,668 175,00 156 150,000 150,600 1,000,000 Total 160,000 5.34 (mg) Total 100,000 160,000 5.34 (mg) Total 100,000 160,000 5.34 (mg) Total Chup (bb) % of Total Weight 4.21 SQSUE (End-of-Life Vehicles (ELV) Directive). Signed and the above EU Directive shabeen verified via internal design controls, supplier declarations, and /or analytical test data. Total Total 00,000 % of Total Weight 4.21 SQSUE (End-of-Life Vehicles (ELV) Directive). Signed and the above EU Directive shabeen verified via internal design controls, supplier declarations, and /or analytical test data. Total 00,000 % of Total Weight 0.78 Viriel Compounds used by Mirrochip meet the ULS4 V0 flammability standard for plastics. You can access the UL IOTM family of databases to obtain a test report at /// shorts/malendustrice/bienemical/plastics// signed// standard forme// signed// signed/	Silicon	7440-21-3	Chip (Die)	4.210	6.340	42,100			Total	100.00	
Tin 7440-31-5 Plang on external leads (pers) - Math: Tr. / arweided at 100°C for 1 tox 1 1.780 2.696 1.79 (00) Toxia Control 100.00 0.1506 g Total Mass TotALS: 100.000 150.600 1.000.000 6.34 (mg) Total Chip (Die) % of Total Weight 4.21 25%EC (End-of-Life Vehicles (EU) Directive) Seamiconductor devices and its horogenous materials comply with EU Directive 200295/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive) Doped Silicon 7440-21.3 100.00 25%EC (End-of-Life Vehicles (EU) Directives Seamiconductor devices and, to the best of bic knowledge and belief as 0 th edite of this document, there is no credite reason to believe that the unavcidable impurity concentration of the chemical substance. If any, full concentration of the chemical substance is ADP and there is no credite reason to believe that the unavcidable impurity concentration of the chemical substance. If any, full concentration of the chemical substance is the packing sign on the outer box and in the store is knowledge and belief as of the date of this document, there is no credite the search to play the store external substance is a semiconductor devices in protected from of the section and from polyving chorder (PC) plastic. "Window envelopes" used to hold the packing sign on the outer box and in this form mation in this form concerning substance is provided by Netro Material substance is a form and the secret as on believe the secret as nowledge and belief as of the date is dubit far of the date in this form. Microchip Technology incorporated and form any torale weight of anticipate se	Copper	7440-57-5	Wire Bond	0.764	1.151	7,644	0.29	(mg) Total	Die Attach	% of Total Weight	0.19
Outsold Total <	Palladium	7440-05-3	Wire Bond	0.016	0.023	156		Silver	7440-22-4	75.00	
0.1506 g Total Mass 6.34 (mg) Total Chip (Dip) % of Total Weight 4.21 semiconductor device and its homogenous materials comply with EU Directive 202/3%EC (RoHS Directive), EU Directive 201/6%EU (RoHS Recast Directive) and with EU Directive Doped Silicon 7440-21-3 100 spliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Total Total Total 100.00 spliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Total Total Total 0.00.00 ing compounde wideg and belief as of the date of this document, there is no credible reason to believe that the unavoidable inpurity concentration of the chemical substance, if any fugutary scheme world-wide. 1.17 (mg) Total Wire Bond % of Total Weight 0.78 ing compounde used by MicroChip meet the UL3AV Unamability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at //uLCom/globa/leng/pages/offerings/industries/chemicals/plastics/ 1.17 (mg) Total Wire Bond % of Total Weight 0.78 ing compounde used by MicroChip Total to the bast of its knowledge and belief as of the date listed in this form. Microchip Tochnology Incorporated asemiconductor devices in resorts and correct to the bast of its knowledge and belief as of the date listed in this form. Microchip Tochnology Incorporated asemic	Tin	7440-31-5						Epoxy resin			
semiconductor device and its homogenous materials comply with EU Directives 9 rotate Mices 253EC [Chd-of-Life Vehicles (ELV) Directive). ppliance with the above EU Directives has been verified via internal design controls, supplier declarations, and <i>Ior</i> analytical test data. themical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology prorated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concent from any regulatory scheme world-wide. ding compounds used by Microchip meet the UL94 V0 frammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <i>Jill.comglobaliang/agae/offerings/industries/chemicals/plastics/</i> protective "Libes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and an "reels" may be made from PVC plastic. Total 100.00 Total			TOTALS:	100.000	150.600	1,000,000			Total	100.00	
semiconductor device and its homogenous materials comply with EU Directive 202/395/EC (RoHS Directive), EU Directive 201/85/EU (RoHS Recast Directive) and with EU Directive. Directives has been verified via internal design controls, supplier declarations, and <i>lor</i> analytical test data. hemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology prorated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, ling compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <i>Mul.comglobaleng/apage/offerings/industries/chemicals/plastics/</i> protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in "rele!" may be made from PVC plastic. Total 100.00 Copper 7440-57-5 98.00 Palladum 7440-06-3 2.00 Total 100.00 Total 100.00 Tot											4.04
In below the threshold of regulatory concern for any regulatory scheme world-wide. Imp compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at Imp compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at Imp compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at Imp compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at Imp compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in "reels" may be made from PVC plastic. Copper 7440-65-3 2.00 original packing materials is true and correct to the baset of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated and subschores (silicon IC) in the finished parts. Total 100.00 original packing by information any not have been provided by subcontract assemblers and na wraterial suppliers. Information is different average weight of anticpated significant toxic metals components. These estimates do not include trace levels spants, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Imp cont information in Microchip 's tanda	/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 20	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Dire	ective) and wit	h EU Directive	6.34		7440-21-3	100	4.21
c/lui_com/global/eng/pages/offerings/industries/chemicals/plastics/ Copper 7/40-57-5 98.00 protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and ain "reels" may be made from PVC plastic. Palladium 7/40-57-5 98.00 rochip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated's semiconductor devices in roriginal packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the pleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by subcontract assemblers and raw material suppliers. Information is vided only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not include trace levels loopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Image: Plating on external leads (pins) - Matte Tin / % of Total Weight 1.79 rochip Technology Incorporated does not provide and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. Image: Plating on external leads (pins) - Matte Tin / % of Total Weight 1.79 rochip tacking materials of the users' reliance on the information in Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or raveige any duty to notify users of updates or ch	2/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c	comply with EU Directive 20 I via internal design controls hemical substance is NOT a	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and,	to the best o	f Microchip Te	echnology		Doped Silicon	7440-21-3 Total	100 100.00	
An "reels" may be made from PVC plastic.	V/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this d	comply with EU Directive 20 I via internal design controls hemical substance is NOT a locument, there is no credib	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	to the best o	f Microchip Te	echnology		Doped Silicon	7440-21-3 Total	100 100.00	
ochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the pleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier mation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and administic on the varage weight of these parts and the average weight of materials contained within silicon devices (silicon IC) in the finished parts. ochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this dera and terms and conditions of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. Plating on external leads (pins) - Matte Tin / anneeled at 150°C for 1 hour % of Total Weight 1.79 anneeled at 150°C for 1 hour % of Total Weight 1.79 anneeled at 150°C for 1 hour % of Total Weight 1.79 anneeled at 150°C for 1 hour % of Total Weight 1.79 anneeled at 150°C for 1 hour % of Total Weight 1.79 anneeled at 150°C for 1 hour % of Total Weight 1.79 anneeled at 150°C for 1 hour % of Total Weight 1.79 anneeled at 150°C for 1 hour hour	V53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this of the below the threshold of regulatory concern for any re- ting compounds used by Microchip meet the UL94 V0 f	comply with EU Directive 2(I via internal design controls hemical substance is NOT a locument, there is no credib gulatory scheme world-wide flammability standard for pla	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen 2.	to the best o tration of the	f Microchip Te chemical sub	echnology		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
rochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. The provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. The provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. The provided by Users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or erwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or is Certificate of Compliance for semiconductor products.	2/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this c ot below the threshold of regulatory concern for any re- ding compounds used by Microchip meet the UL94 V0 i Jul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship	comply with EU Directive 20 I via internal design controls hemical substance is NOT a locument, there is no credib gulatory scheme world-wide llammability standard for pla als/plastics/	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen b. astics. You can access the UL iQTM family of databases to	to the best o tration of the o obtain a tes	f Microchip Te chemical sub t report at	echnology sstance, if any,		Copper	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 98.00	
erwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5 100.00 nis Certificate of Compliance for semiconductor products.	2/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this of ot below the threshold of regulatory concern for any re- ding compounds used by Microchip meet the UL94 V0 i ://ul.com/global/eng/pages/offerings/industries/chemic: protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatic r original packing materials is true and correct to the be upleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade see vided only as estimates of the average weight of these [comply with EU Directive 20 I via internal design controls hemical substance is NOT a locument, there is no credib gulatory scheme world-wide lammability standard for pla als/plastics/ oped are made from polyvin op in this form concerning s set of its knowledge and beli has been compiled based o irets and some information 1 parts and the average weigh	0295/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen b. stics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology In fef, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets provi nay not have been provided by subcontract assemblers at of anticipated significant toxic metals components. Thes	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw r nd raw matei	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot gua material suppl rial suppliers.	echnology sstance, if any, puter box and or devices in rantee the iers. Supplier Information is		Copper	7440-21-3 Total Wire Bond 7440-57-5 7440-05-3	100 100.00 % of Total Weight 98.00 2.00	
T-1-1 400.00	2/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this of to below the threshold of regulatory concern for any re- ding compounds used by Microchip meet the UL94 V0 if 'Jul.com/global/eng/pages/offerings/industries/chemic- protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. rrochip Technology Incorporated believes the information roriginal packing materials is true and correct to the bb pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these j opants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any vi- ranties provided by Microchip Technology Incorporated does not provide any Microchip Technology Incorporated does not provide any Microchip Technology Incorporated the second second second second second second second second second second second second provide any Microchip Technology Incorporated second second sec	comply with EU Directive 20 I via internal design controls hemical substance is NOT a locument, there is no credib gulatory scheme world-wide lammability standard for pla als/plastics/ oped are made from polyvin on in this form concerning s sto of its knowledge and beli has been compiled based o rets and some information i parts and the average weigh nin silicon devices (silicon 10 warranty, express or implied	0295/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen b. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology In the ranges provided in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers at t of anticipated significant toxic metals components. Thes C) in the finished parts.	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw r nd raw maters se estimates	f Microchip To e chemical sub t report at g slip on the o semiconduct ed cannot gua naterial suppliers. do not includo usive, limited	echnology sstance, if any, outer box and or devices in rantee the iers. Supplier Information is a trace levels product	1.17	(mg) Total Copper Palladium	7440-21-3 Total Wire Bond 7440-57-5 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 98.00 2.00 100.00	0.78
	2/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this d to below the threshold of regulatory concern for any re- ding compounds used by Microchip meet the UL94 V0 (c//ul.com/global/eng/pages/offerings/industries/chemic- protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. rotchip Technology Incorporated believes the informatic rotiginal packing materials is true and correct to the be upleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these opants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any vi- ranties provided by Microchip Technology Incorporater tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or rwise, suffered by users or third parties as a result of t	comply with EU Directive 20 I via internal design controls hemical substance is NOT a locument, there is no credib gulatory scheme world-wide lammability standard for pla als/plastics/ opped are made from polyvin on in this form concerning s sto fits knowledge and beli has been compiled based o rets and some information i parts and the average weigh nin silicon devices (silicon 10 warranty, express or implied d and its subsidiaries are co changes to Material Conten he users' reliance on the inf	0295/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen satics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hoi ubstances restricted by RoHS in Microchip Technology In fer, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers an t of anticipated significant toxic metals components. Thes c) in the finished parts. , with respect to the information provided in this declarati ntained in Microchip's standard terms and conditions of s t Declarations and shall not be liable for any damages, directions and	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw r nd raw mate se estimates on. The exclu ale. These ar ect or indirec	f Microchip Te chemical sub t report at g slip on the of semiconduct d cannot gua naterial suppliers. do not includo usive, limited e provided in t, consequent	echnology ostance, if any, outer box and or devices in rantee the iers. Supplier Information is a trace levels product Microchip's tial or	1.17	(mg) Total Copper Palladium (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 98.00 2.00 100.00 % of Total Weight	0.78

				ination Base opper Alloy (ogeneous Materials: .g. pc boards, display:	s)	JEDEC 97 Product Markir and/or Pkg. Labeling e3
Semiconductor Devic	ce Type: 40 VQFN 6x6x									es
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	32.48	(mg) Total	Mold Compound	% ot Total Weight	34.74
Silica, vitreous (or fused)	60676-86-0	Mold Compound	29.529	27.610	295.290		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	3.022	2.826	30.224		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.084	1,949	20.844		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.104	0.097	1,042		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	54.093	50.577	540,933			Total	100.00	
Iron	7439-89-6	Lead Frame	1.331	1.244	13,306	52.94	(mg) Total	Lead Frame	% of Total Weight	56.62
Silver	7440-22-4	Lead Frame	1.079	1.009	10,786		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.071	0.066	708		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.047	0.044	467		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.100	1.029	11,004		Zinc	7440-66-6	0.13	
Epoxy Resin	Trade secret	Die Attach	0.210	0.196	2,096		Phosphorous	7723-14-0	0.08	
Silicon	7440-21-3	Chip (Die)	4.150	3.880	41,500			Total	100.00	
Gold	7440-57-5	Wire Bond	1.310	1.225	13,100	1.22	(mg) Total	Die Attach	% of Total Weight	1.31
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.870	1.748	18,700		Silver	7440-22-4	84.00	
		TOTALS:	100.000	93.500	1,000,000		Epoxy Resin	Trade secret	16.00	
	0.0935	g Total Mass						Total	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						3.88	(mg) Total	Chip (Die)	% of Total Weight	4.15
•		s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and,	, to the best o	f Microchip T	echnology		Doped Silicon	7440-21-3 Total	100 100.00	
hermical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this of is not below the threshold of regulatory concern for a	chemical substance is NOT a document, there is no credib iny regulatory scheme world-	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer	ntration of the	e chemical sul			Doped Silicon	7440-21-3 Total	100 100.00	
chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this of is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic	chemical substance is NOT a document, there is no credib iny regulatory scheme world- flammability standard for pla als/plastics/	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide. astics. You can access the UL iQTM family of databases to	ntration of the	e chemical sul	ostance, if	1.22	,	7440-21-3	100	1.31
orporated's knowledge and belief as of the date of this of r, is not below the threshold of regulatory concern for an Iding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemic	chemical substance is NOT a document, there is no credib iny regulatory scheme world- flammability standard for pla als/plastics/	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide.	ntration of the	e chemical sul	ostance, if	1.22	Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
chemical substance is absent from the list above, the c proprated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for al ding compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information ieir original packing materials is true and correct to the upleteness and accuracy of data in this form because it pleteness and accuracy of data in this form because it rration is provided only as estimates of the average w ude trace levels of dopants, metals, and non-metal mat rochip Technology Incorporated does not provide any v ranties provided by Microchip Technology Incorporate tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or	chemical substance is NOT a document, there is no credib ny regulatory scheme world- flammability standard for pla asis/plastics/ pped are made from polyving on in this form concerning si best of its knowledge and b has been compiled based o has been compiled based o has been compiled based o reade screts and some infor reight of these parts and the terrais contained within silic warranty, express or implied d and its subsidiaries are con- changes to Material Contemi	In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide. Isstics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir elief, as of the date listed in this form. Microchip Technol n the ranges provided in Material Safety Data Sheets prov rmation may not have been provided by subcontract assi average weight of anticipated significant toxic metals con in devices (silicon IC) in the finished parts. , with respect to the information provided in this declarat ntained in Microchip's standard terms and conditions of s to Declarations and shall not be liable for any damages, dii	ntration of the o obtain a tes old the packin ncorporated's logy Incorpor vided by raw I emblers and emblers and mponents. Th ion. The excl sale. These ar rect or indirect	e chemical sul at report at ag slip on the a semiconduct ated cannot g material suppi material suppi asse estimates usive, limited re provided in ct, consequen	ostance, if outer box or devices uarantee the liers. uppliers. do not product Microchip's tial or	1.22	Doped Silicon (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100.00 100.00 % of Total Weight	
chemical substance is absent from the list above, the c proprated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for al ding compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information ieir original packing materials is true and correct to the upleteness and accuracy of data in this form because it pleteness and accuracy of data in this form because it rration is provided only as estimates of the average w ude trace levels of dopants, metals, and non-metal mat rochip Technology Incorporated does not provide any v ranties provided by Microchip Technology Incorporate tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or	chemical substance is NOT a document, there is no credib iny regulatory scheme world- flammability standard for pla- cals/plastics/ pped are made from polyving on in this form concerning si e best of its knowledge and b thas been compiled based oi trade secrets and some info veight of these parts and the terials contained within silicc warranty, express or implied d and its subsidiaries are con- changes to Material Content the users' reliance on the infi	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide. Isstics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir elief, as of the date listed in this form. Microchip Technol n the ranges provided in Material Safety Data Sheets prov rmation may not have been provided by subcontract assi average weight of anticipated significant toxic metals con in devices (silicon IC) in the finished parts. , with respect to the information provided in this declarat ntained in Microchip's standard terms and conditions of st	ntration of the o obtain a tes old the packin ncorporated's logy Incorpor vided by raw I emblers and emblers and mponents. Th ion. The excl sale. These ar rect or indirect	e chemical sul at report at ag slip on the a semiconduct ated cannot g material suppi material suppi asse estimates usive, limited re provided in ct, consequen	ostance, if outer box or devices uarantee the liers. uppliers. do not product Microchip's tial or		(mg) Total Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour 7440-31-5	100 100.00 % of Total Weight 100.00 % of Total Weight 100.00	1.31
hemical substance is absent from the list above, the c porated's knowledge and belief as of the date of this is is not below the threshold of regulatory concern for at ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi pertain "reels" may be made from PVC plastic. The perchaology Incorporated believes the informatic elfororiginal packing materials is true and correct to the eleteness and accuracy of data in this form because it lifer information is often protected from disclosure as mation is provided only as estimates of the average w de trace levels of dopants, metals, and non-metal mat public provided by Microchip Technology Incorporated atoschip Technology Incorporated does not provide any y anties provided by Microchip Technology Incorporates ations, sales order acknowledgement, and invoices. Dechip disclaims any duty to notify users of updates or wise, suffered by users or third parties as a result of f	chemical substance is NOT a document, there is no credib iny regulatory scheme world- flammability standard for pla- cals/plastics/ pped are made from polyving on in this form concerning si e best of its knowledge and b thas been compiled based oi trade secrets and some info veight of these parts and the terials contained within silicc warranty, express or implied d and its subsidiaries are con- changes to Material Content the users' reliance on the infi	In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide. Isstics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir elief, as of the date listed in this form. Microchip Technol n the ranges provided in Material Safety Data Sheets prov rmation may not have been provided by subcontract assi average weight of anticipated significant toxic metals con in devices (silicon IC) in the finished parts. , with respect to the information provided in this declarat ntained in Microchip's standard terms and conditions of s to Declarations and shall not be liable for any damages, dii	ntration of the o obtain a tes old the packin ncorporated's logy Incorpor vided by raw I emblers and emblers and mponents. Th ion. The excl sale. These ar rect or indirect	e chemical sul at report at ag slip on the a semiconduct ated cannot g material suppi material suppi asse estimates usive, limited re provided in ct, consequen	ostance, if outer box or devices uarantee the liers. uppliers. do not product Microchip's tial or		(mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100.00 100.00 % of Total Weight	1.31

MICROCHIP Semiconductor Devic	e Type: 48 VQFN 7x7x	0.9mm (RS)		nation Base A pper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Iotal			44.99	(mg) Total	Mold Compound	% ot Total Weight	34.74
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		(5,	•	•	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	29.529	38.240	295,290		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	3.022	3.914	30,224		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin Carbon Black	Trade Secret 1333-86-4	Mold Compound Mold Compound	2.084	2.699 0.135	20,844 1,042		Phenolic Resin Carbon Black	Trade Secret 1333-86-4	6.00 0.30	
Calbon Black	7440-50-8	Lead Frame	54.093	70.051	540.933		Carbon Black	1333-86-4 Total	0.30	
Iron	7439-89-6	Lead Frame	1.331	1.723	13.306	73.32	(mg) Total	Lead Frame	% of Total Weight	56.62
Silver	7439-89-8	Lead Frame	1.079	1.397	10,786	73.32		7440-50-8	% of Total weight 95.54	56.62
Zinc	7440-22-4 7440-66-6	Lead Frame	0.079	0.092	708		Copper Iron	7439-89-6	95.54 2.35	
Phosphorous	7723-14-0	Lead Frame	0.047	0.092	467		Silver	7439-89-8	1.91	
Silver	7440-22-4	Die Attach	0.969	1.255	9.694		Zinc	7440-22-4	0.13	
Epoxy resin	68475-94-5	Die Attach	0.301	0.390	3,013		Phosphorous	7723-14-0	0.08	
Copper(II) oxide	1317-38-0	Die Attach	0.039	0.051	393		Thosphorous	Total	100.00	_
Silicon	7440-21-3	Chip (Die)	4.150	5.374	41,500	1.70	(mg) Total	Die Attach	% of Total Weight	1.31
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	1.287	1.667	12.871	1.70	Silver	7440-22-4	74.00	1.51
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.023	0.030	229		Epoxy resin	68475-94-5	23.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.870	2.422	18,700		Copper(II) oxide	1317-38-0	3.00	
		TOTALS:	100.000	129.500	1.000.000		Copportin/ childo	Total	100.00	
	0 1 2 0 5	g Total Mass		.20.000	.,000,000	5.37	Total (mg)			4.15
is semiconductor device and its homogenous materials	comply with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Direc	tive) and with	EU	0.01		Chip (Die)	% of Total Weight	4.15
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the c	d via internal design contro chemical substance is NOT	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and,	to the best of	Microchip Teo	chnology		Doped Silicon	7440-21-3 Total Wire Bond	100 100.00	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the c corporated's knowledge and belief as of the date of this dy, is not below the threshold of regulatory concern for a bolding compounds used by Microchip meet the UL94 V0	d via internal design contro chemical substance is NOT document, there is no credi ny regulatory scheme world flammability standard for p	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	to the best of tration of the	Microchip Tee chemical subs	chnology	1.70		7440-21-3 Total	100	1.31
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the c iscorporated's knowledge and belief as of the date of this iny, is not below the threshold of regulatory concern for a lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi	d via internal design contro hemical substance is NOT document, there is no credi ny regulatory scheme work flammability standard for p als/plastics/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide.	to the best of tration of the o obtain a test	Microchip Tec chemical subs report at	chnology stance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
birective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) compliance with the above EU Directives has been verified a chemical substance is absent from the list above, the c necorporated's knowledge and belief as of the date of this of ny, is not below the threshold of regulatory concern for a lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi ertain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informati- neir original packing materials is true and correct to the b ompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade see	d via internal design contro chemical substance is NOT document, there is no credi ny regulatory scheme work flammability standard for p als/plastics/ pped are made from polyvi on in this form concerning : est of its knowledge and be thas been compiled based or crets and some information parts and the average weig	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen s-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The	to the best of tration of the o obtain a test Id the packing corporated's s y Incorporated ided by raw m	Microchip Tec chemical subs report at y slip on the ou semiconducto d cannot guara aterial suppliers. In	chnology stance, if uter box and r devices in antee the ers. Supplier formation is		Copper	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8	100 100.00 % of Total Weight 98	
birective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) compliance with the above EU Directives has been verifier a chemical substance is absent from the list above, the c corporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/globalleng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi ertain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informati- ieri original packing materials is true and correct to the b ompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade see f dopants, metals, and non-metal materials contained wit licrochip Technology Incorporated does not provide any varantions, sales order acknowledgement, and invoices. licrochip disclaims any duty to notify users of updates or	d via internal design contro chemical substance is NOT document, there is no credi ny regulatory scheme work flammability standard for p als/plastics/ pped are made from polyvi on in this form concerning : est of its knowledge and be has been compiled based crets and some information parts and the average weig hin silicon devices (silicon warranty, express or implie d and its subsidiaries are co changes to Material Conter	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen d-wide. lastics. You can access the UL IQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s ant Declarations and shall not be liable for any damages, dir	to the best of tration of the o obtain a test ld the packing corporated's i y Incorporated ided by raw m nd raw materi se estimates d ion. The exclu: ale. These are ect or indirect	Microchip Tec chemical subs report at semiconducto d cannot guara aterial suppliers. In lo not include sive, limited p provided in N , consequentia	chnology stance, if uter box and r devices in antee the ers. Supplier aformation is trace levels roduct licrochip's al or		Copper Copper Palladium (mg) Total (mg) Total	7440-21-3 Total Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 98 2 100.00 % of Total Weight	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifier a chemical substance is absent from the list above, the c corporated's knowledge and belief as of the date of this in y, is not below the threshold of regulatory concern for a olding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemic ne protective "tubes" in which the specific product is shi rtain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatii eir original packing materials is true and correct to the b ompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade see ' dopants, metals, and non-metal materials contained wit icrochip Technology Incorporated does not provide any arraties provided by Microchip Technology Incorporated jotaching sestimates of the average weight of these ' dopants, metals, and non-metal materials contained wit icrochip Technology Incorporated does not provide any arrations, sales order acknowledgement, and invoices. icrochip disclaims any duty to notify users of updates or	d via internal design contro chemical substance is NOT document, there is no credi ny regulatory scheme work flammability standard for p als/plastics/ pped are made from polyvir on in this form concerning est of its knowledge and be thas been compiled based i crets and some information parts and the average weig hin silicon devices (silicon warranty, express or implied d and its subsidiaries are cc changes to Material Contel the users' reliance on the in	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- l-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In life, as of the date listed in this form. Microchip Technology In on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s	to the best of tration of the o obtain a test ld the packing corporated's i y Incorporated ided by raw m nd raw materi se estimates d ion. The exclu: ale. These are ect or indirect	Microchip Tec chemical subs report at semiconducto d cannot guara aterial suppliers. In lo not include sive, limited p provided in N , consequentia	chnology stance, if uter box and r devices in antee the ers. Supplier aformation is trace levels roduct licrochip's al or	1.70	Copper Copper Palladium	7440-21-3 Total Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 98 2 100.00 % of Total Weight 100.00	1.31

torochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in ir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the mpleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier ormation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often approach of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.	MICROCHIP Semiconductor Devi	ce Type: ABZJ 56 VG	FN 8х8х0.9 (RT)		ation Base A oper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Sites, result Figure (Filter) Figure (Filter) Solid (Compared 3 26 / 10 / 10 / 10 / 10 / 10 / 10 / 10 / 1	Basic Substance	CAS Number			mg/part	ppm	74.48	(mg) Total	Mold Compound	% ot Total Weight	40.82
Empty Ream Trade Sector Noted Compound 3.650 6.600 35.571 Provide Ream Trade Sector 0.000				•	0.			Silica vitreous (or fused)	60676-86-0	85.00	
Phone Ream Trade Secret Modi Compound 0.2449 24.490 24.490 24.490 Component Trade Secret 0.00 Other Bink 1333.846.1 Last Frame 0.02 0.22 </td <td></td>											
Cathon Black 1333 884 Mod Compound 0.122 0.223 1.235 Cathon Black 1333 894 0.33 If on 1435 854 Laal Frame 50.558 0.236 0.55.54 0.206 0.006 0.121 0.225 0.265 0.006 0.133 894 0.30 0.206 If on 1435 854 Laal Frame 0.066 0.121 0.626 0.006 0.121 0.626 0.006 0.121 0.626 0.007 1.400 Frame 0.286 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>											
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Silver 7440.924 Lead Frame 1.088 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.089 1.099 1.089 1.099			Lead Frame		92.249					100.00	
Sher 7440 524 Lad Frame 1.008 1.839 10.081 Zinc 7440 50.5 065.4 Phologitoria 7720 364 Load Frame 0.064 0.100 457 Export resin 7720 364 Load Frame 0.064 0.100 457 Store 7720 364 Load Frame 0.044 0.100 457 Store 7720 364 Load Frame 0.044 0.100 457 Store 7720 364 Load Frame 0.044 0.100 457 Store 7720 364 Wre Bord pallalum coaled coper (LP4) 1.857 3.858 185.606 0.27 mg Teal 100.0 To 7440 263 Wre Bord pallalum coaled coper (LP4) 1.857 3.858 185.606 0.27 mg Teal 80 To 7440 263 Wre Bord pallalum coaled coper (LP4) 1.857 3.858 185.606 0.27 mg Teal 80 Store Total weight Store Total weight 2.5 Store 7440 26.4 80 100.00 Total Total weight Total weight 1.00.00 100.00 100.00 100.00 100.00 100.00 Store Total weight 1.00.00 <td< td=""><td>Iron</td><td>7439-89-6</td><td>Lead Frame</td><td>1,244</td><td>2.269</td><td>12.436</td><td>96.56</td><td>(mg) Total</td><td>Lead Frame</td><td>% of Total Weight</td><td>52.92</td></td<>	Iron	7439-89-6	Lead Frame	1,244	2.269	12.436	96.56	(mg) Total	Lead Frame	% of Total Weight	52.92
$\frac{2 \text{ In } 1 + 2 \text{ Hotgbrous}}{3 \text{ Hotgbrous}} = \frac{7460.666}{1431} = \frac{1404 \text{ Frame}}{140.224} = \frac{10.048}{104} = \frac{10.026}{104} = \frac{10.026}{120} = \frac{100}{120} = $	Silver	7440-22-4	Lead Frame	1.008	1.839	10.081					
Phosphorus 1773-14-0 Lead Frame 0.044 0.089 437 Sheet 7763-14-0 Die Attach 0.120 0.201 1.20 Econy retin Trade Secret Die Attach 0.030 0.555 300 Conon 7763-14-0 Die Attach 0.030 0.555 300 Conon 7763-14-0 Die Attach 0.030 0.555 300 Conon 7763-14-0 Die Attach 0.000 1537 20 mit and presentation 0.000 1537 20 mit and presentation 0.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000 1500 100.000											
Silver 7440224 Die Attach 0.120 0.210 1.200 Boox rein Trade Beerer Die Attach 0.055 300 Propertures 7440266 0.31 Boox rein 7440273 Wire Bord patibility 250 4.520 250 4.520 250 4.520 250 4.520 250 0.055 300 Propertures 7440266 0.33 0.020 0.055 300 250 4.520 250 4.520 250 4.520 250 4.520 10.00 0.65 300 331 17.200 <td></td>											
Epocy resin Trade Secret Die Atlach Note Trade											
Silicon 7440-21-3 Chip (Die) 2.500 4.562 25,000 Total 100,00 Palladium 7440-05-3 Wire Bond palladium coated copper (CuP4) 0.033 0.060 331 Exponential control of the palladium coated copper (CuP4) 0.033 0.060 331 Exponential control of the palladium coated copper (CuP4) 0.033 0.060 331 Exponential control of the palladium coated copper (CuP4) 0.033 0.060 331 Exponential control of the palladium coated copper (CuP4) 0.033 0.060 331 Exponential control of the palladium coated copper (CuP4) 0.033 0.060 331 Exponential control of the palladium coated copper (CuP4) 0.033 0.060 331 Exponential control of the palladium coated copper (CuP4) 0.033 0.060 331 Exponential control of the palladium coated copper (CuP4) 0.033 0.060 331 Exponential control of the palladium coated copper (CuP4) 0.033 0.060 331 Exponential control of the palladium coated copper (CuP4) 0.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00											
Copper 7440-05-3 Wire Bond palladium coated copper (LuPd) 1.857 3.388 18.560 0.27 (m) Total Die Attach % of Total Weight 0.15 Tin 7440-05-3 Pulling on esemal lass (pin) - Mate 17.20 3.138 17.200 3.138 17.200 100.00 102.400 100								Theopholodo			
Pailadum 7440-25-3 Wite Bond palladum context (pre) 0.033 0.060 331 7200 1345 100.0							0.27	(mg) Total			0 15
Tin Test Participant Test PartiPart <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>0.2.</td><td></td><td></td><td></td><td>0110</td></t<>							0.2.				0110
O.18246 g Total Mass TOTALS: 100.000 162.460 1.000.000 0.18246 g Total Mass 456 Total (mg) Chp(Die) % of Total Weight 2.5 is seniconductor device and its homogenous materials comply with EU Directive 200295/EC (RoHS Directive), EU Directives and with EU 0.0ped Silicon 7440-21-3 100 mpliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Total 100.00 7440-21-3 100 chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology 3.45 (mg) Total Wire Bond protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and ir original packing materials is true and correct to the best of its incordent is and belied, as of the date of analyzes in this form becaurcary of data in this form becaurcary of data in this form becaurcary of data in this form concerning substances restricted by RoHS in Microchip Technology Incorporated Kownolded by marketial suppliers. Supplier original strikes/doted in Material Safety Data Sheets provided by incorporated for molecular base in the second particular toxic metal suppliers. Supplier original strikes/doted in Material Safety Data Sheets provided by and anaterial suppliers. Supplier original strikes/dotal analysin anaterial suppliers. Supplier origin atatris/strike by											
Output: Control with the above EU Directives and this form for a second of the date listed of the date		1110 01 0						Epoxy room			
is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU ective 2002/05/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU ective 2002/05/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU ective 2002/05/EC (RoHS Directive), EU Directive 300 205/EC (RoHS Directive), EU Directive		0 19346 a		1001000		.,,	4.56	Total (mg)			2.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Total 100 mpliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Total 100.0 chemical substance is Absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology orporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if light orporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if light orporated knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if light orporated knowledge and belief as of the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and the rare test reason of belief, as of the date listed of this form because it has been complied based on the ranges provided in Microchip Technology Incorporated cannot suppliers. Supplier shoulded are werage weight of these parts and the average weight of an							4.56	i otal (mg)	Chip (Die)	% of Total weight	2.5
mpliance with the above EU Directives has been verified via internal design controls, supplier declarations, and <i>lor</i> analytical test data. chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology or portade's knowledge and belid as of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not below the threshold of regulatory concern for any regulatory scheme word-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at pr/ul.com/global/eng/pages/offerings/industries/chemicals/plastic.' protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and tain "retels" may be made from PVC plastic. Trotal 100.00 Total 2 Paladium 7440-05-3 2 Total 100.00 Total 4 Paladium 0 Total 4 Paladium 7440-05-3 2 Total 100.00 Total 4 Paladium 0 Total 4 Paladium 7440-05-3 2 Total 100.00 Total 4 Paladium 7440-05-3 2 Total 100.00 Total 4 Paladium 0 Total 4 Paladium 7440-05-3 2 Total 100.00 Total 4 Paladium 7440-05-3 Total 100.00 Total 4 Pa			2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol	IS Recast Direc	tive) and with	EU		Doped Silicon	7440-21-3	100	
chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology orporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if <i>i</i> , is not below the threshold of regulatory concern for any regulatory scheme world-wide. Idling compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <i>p</i> //ul.con/global/eng/agaes/dferings/industries/chemicals/plastics/ protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in or rest" may be made from PVC plastic. "rochip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated cannot guarantee the projeteness and a succarecy of data in this form because in thas been compiled based on the rangees provided by wuterial Safety Data Sheets provided by raw material suppliers. Information is dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided by subcontract assemblers and raw material suppliers. Information is dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. crochip Technology Incorporated does not provide and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's stations, sales or othar acconveledgement, and in workes. crochip disclaims any duty to notify users of updates or changes to Material Content Declarations (MCD) or independent third party test reports		•	sumplier declarations and for analytical test data						Total	100.00	
p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ Coppert 7440-50-3 98 p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ Coppert 7440-50-3 2 p:rotective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and tain "reels" may be made from PVC plastic. Total 98 p:roteching packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the mpleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Suppliers form disclosure as trade secrets and some information may not have been provided by by subcontract assemblers and raw material suppliers. Information is within slicon devices (silicon IC) in the finished parts. Total 100.00 protecting the protected dees not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product range provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's tandowledgement, and invoices. 3.14 (mg) Total Plating on external hour hour hour hour hour hour hour hour	corporated's knowledge and belief as of the date of this	s document, there is no credible	reason to believe that the unavoidable impurity conce				3.45	(mg) Total	palladium coated	% of Total Weight	1.89
tain "reels" may be made from PVC plastic. Palladium 7440-05-3 2 Palladium 7440-05-3 2 Total 100.00 is original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the mpleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels to the information provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's tande at 150°C for 1 hour Palladium Palladium Palladium 7440-05-3 2 Total 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 vided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels 3.14 (mg) Total Palladium 1.72 ranties provided by Microchip Technology Incorporated does not provide any warranty, express			tics. You can access the UL iQTM family of databases								
tronchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in iar original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the mpleteness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. Supplier ormation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is ivoided only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not include trace levels dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product tranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's totations, sales order acknowledgement, and invoices. Troin <u>740-31-5</u> 100.00 Tin <u>7440-31-5</u> 100.00	aparation and a second pages of one mgs madalites of em			to obtain a test	report at			Copper		98	
Tranties provided by Microphyted does not provide any warranty, express or implied, with respect to the information provide on this decidation. The exclusive, initiate product ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's otations, sales order acknowledgement, and invoices. Trochip disclaims any duty to notify users or tupdates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or nerwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5 100.00		hipped are made from polyviny	chloride (PVC) plastic. "Window envelopes" used to h		•	uter box and			7440-50-8	2	
herwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5 100.00	he protective "tubes" in which the specific product is sh ertain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informat leir original packing materials is true and correct to the I ompleteness and accuracy of data in this form because formation is often protected from disclosure as trade sa rovided only as estimates of the average weight of these	tion in this form concerning su best of its knowledge and belie it has been compiled based on ecrets and some information m e parts and the average weight	ostances restricted by RoHS in Microchip Technology I i, as of the date listed in this form. Microchip Technolo the ranges provided in Material Safety Data Sheets pro ay not have been provided by subcontract assemblers of anticipated significant toxic metals components. Th	old the packing Incorporated's s gy Incorporated vided by raw ma and raw materia	slip on the ou emiconducto cannot guara aterial supplie al suppliers. In	r devices in antee the ers. Supplier nformation is			7440-50-8	2	
	he protective "tubes" in which the specific product is sh ertain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informat ieir original packing materials is true and correct to the ompleteness and accuracy of data in this form because formation is often protected from disclosure as trade sa rovided only as estimates of the average weight of these i dopants, metals, and non-metal materials contained wi icrochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporat uotations, sales order acknowledgement, and invoices.	tion in this form concerning su best of its knowledge and belie it has been compiled based on ecrets and some information m e parts and the average weight ithin silicon devices (silicon IC) y warranty, express or implied, ted and its subsidiaries are con	ostances restricted by RoHS in Microchip Technology I i, as of the date listed in this form. Microchip Technolog the ranges provided in Material Safety Data Sheets pro ay not have been provided by subcontract assemblers of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declara ained in Microchip's standard terms and conditions of	old the packing Incorporated's s y Incorporated vided by raw ma and raw materia ese estimates do tion. The exclus sale. These are	slip on the ou cannot guara aterial supplic al suppliers. In o not include sive, limited p provided in N	r devices in antee the ers. Supplier nformation is trace levels roduct ficrochip's	3.14	Palladium (mg) Total	7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	2 100.00	1.72
	the protective "tubes" in which the specific product is sh rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informat eir original packing materials is true and correct to the I impleteness and accuracy of data in this form because formation is often protected from disclosure as trade se ovided only as estimates of the average weight of these dopants, metals, and non-metal materials contained wi icrochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporat totations, sales order acknowledgement, and invoices circochip disclaims any duty to notify users of updates of herwise, suffered by users or third parties as a result of	tion in this form concerning su best of its knowledge and belie it has been compiled based on ecrets and some information m e parts and the average weight ithin silicon devices (silicon IC) y warranty, express or implied, ted and its subsidiaries are com or changes to Material Content f the users' reliance on the info	ostances restricted by RoHS in Microchip Technology I i, as of the date listed in this form. Microchip Technolo the ranges provided in Material Safety Data Sheets pro y not have been provided by subcontract assemblers of anticipated significant toxic metals components. The in the finished parts. With respect to the information provided in this declara ained in Microchip's standard terms and conditions of Declarations and shall not be liable for any damages, di	old the packing Incorporated's s gy Incorporated vided by raw ma and raw materia ese estimates du tion. The exclus sale. These are irect or indirect,	slip on the ou cannot guap aterial suppliater al suppliers. In o not include sive, limited p provided in N consequentia	r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	3.14	Palladium (mg) Total	7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2 100.00 % of Total Weight	1.72

Semiconductor Device				nation Base A pper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% lotal			101.10	(mg) Total	Mold Compound	% ot Total Weight	
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm			•	•	
Silica Fused	60676-86-0	Mold Compound	40.454	89.242	404,541		Silica Fused	60676-86-0	88.27	
Epoxy Resin Phenol Resin	Trade Secret Trade Secret	Mold Compound Mold Compound	2.860 2.379	6.309 5.247	28,598 23,786		Epoxy Resin Phenol Resin	Trade Secret Trade Secret	6.24 5.19	
Carbon Black	1333-86-4	Mold Compound Mold Compound	0.137	0.303	1,375		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	48.584	107.176	485.836		Carbon Black	Total	100.00	
Iron	7439-89-6	Lead Frame	1.173	2.587	11.729	110.10	(mg) Total	Lead Frame	% of Total Weight	49.91
Zinc	7440-66-6	Lead Frame	0.062	0.138	624	110.10	Copper	7440-50-8	97.34	43.51
Silver	7440-00-0	Lead Frame	0.050	0.138	499		Iron	7439-89-6	2.35	
Phosphorus	7723-14-0	Lead Frame	0.030	0.091	499		Zinc	7439-69-6	0.13	
Silver	7440-22-4	Die Attach	0.870	1.919	8.701		Silver	7440-00-0	0.10	
Acrylic Resin	Trade secret	Die Attach	0.096	0.212	961		Phosphorus	7723-14-0	0.08	
Epoxy Resin	Trade secret	Die Attach	0.030	0.062	283		Filospiloius	Total	100.00	
Acrylated EP-Resin	Trade secret	Die Attach	0.028	0.137	622	2.49		Die Attach	% of Total Weight	1.13
					-	2.49	(mg) Total Silver	7440-22-4		1.13
Polybutadiene derivative & Coplolymer	Trade secret 7440-21-3	Die Attach Chip (Die)	0.073	0.162	735 25.000				77.00	
Silicon							Acrylic Resin	Trade secret	8.50	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.265	0.585	2,653		Epoxy Resin	Trade secret	2.50	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.005	0.010	47		Acrylated EP-Resin	Trade secret	5.50	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.360	0.794 220.600	3,600 1.000.000	Polybutadie	ne derivative & Coplolymer	Trade secret	6.50 100.00	
		TOTALS:	100.000	220.000	1,000,000			Total		
		g Total Mass				5.52				
	omply with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Direc	ctive) and with	EU	J.J2	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight 100	2.50
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified v	via internal design contro	Is, supplier declarations, and /or analytical test data.				3.32			ý	2.30
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified v emical substance is absent from the list above, the che orated's knowledge and belief as of the date of this do	ria internal design contro emical substance is NOT cument, there is no cred	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concen	to the best of	Microchip Tec	chnology	0.60		7440-21-3	100	0.27
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified v emical substance is absent from the list above, the che iorated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any ng compounds used by Microchip meet the UL94 V0 fla	ria internal design contro emical substance is NOT cument, there is no cred regulatory scheme worl ummability standard for p	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concen	to the best of tration of the	Microchip Tec chemical subs	chnology		Doped Silicon	7440-21-3 Total Wire Bond palladium coated	100 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified v memical substance is absent from the list above, the che porated's knowledge and belief as of the date of this do s not below the threshold of regulatory concern for any ng compounds used by Microchip meet the UL94 V0 fla (ul.com/global/eng/pages/offerings/industries/chemical: rotective "tubes" in which the specific product is shipp	ria internal design contro emical substance is NOT cument, there is no cred regulatory scheme worl ummability standard for p s/plastics/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concen d-wide.	to the best of tration of the o obtain a test	Microchip Tec chemical subs report at	chnology stance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 1.75	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified v hemical substance is absent from the list above, the che porated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any ing compounds used by Microchip meet the UL94 V0 fla //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp in "reels" may be made from PVC plastic. Dechip Technology Incorporated believes the information original packing materials is true and correct to the bes pleteness and accuracy of data in this form because it h mation is often protected from disclosure as trade secret ded only as estimates of the average weight of these pa	via internal design contro emical substance is NOT cument, there is no cred regulatory scheme worl immability standard for p s/plastics/ eed are made from polyvi in this form concerning t of its knowledge and be as been compiled based ats and some informatior rits and the average weig	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concen d-wide. alastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The	to the best of tration of the o obtain a test Id the packing corporated's s y Incorporated ided by raw m	Microchip Tec chemical subs report at y slip on the ou semiconducto d cannot guara aterial suppliers. Ir	chnology stance, if uter box and r devices in antee the ers. Supplier iformation is		Doped Silicon (mg) Total Copper	7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8	100 100.00 % of Total Weight 98	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified we hemical substance is absent from the list above, the che porated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any ing compounds used by Microchip meet the UL94 V0 fla //ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp in "reels" may be made from PVC plastic. Sochip Technology Incorporated believes the information original packing materials is true and correct to the bes pleteness and accuracy of data in this form because it h mation is often protected from disclosure as trade secre ided only as estimates of the average weight of these pa ppants, metals, and non-metal materials contained within bochip Technology Incorporated does not provide any we anties provided by Microchip Technology Incorporated da attions, sales order acknowledgement, and invoices.	via internal design contro amical substance is NOT cument, there is no cred regulatory scheme worl immability standard for p s/plastics/ wed are made from polyvia in this form concerning t of its knowledge and be as been compiled based ats and some information rits and the average weig n silicon devices (silicon arranty, express or implie and its subsidiaries are c	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concen- d-wide. Jastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. Thes IC) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s	to the best of tration of the o obtain a test Id the packing corporated's i y Incorporated ided by raw m nd raw materi se estimates d ion. The exclusion. The exclusion	Microchip Teo chemical subs report at slip on the ou semiconducto d cannot guara aterial supplie al suppliers. Ir lo not include sive, limited pr provided in M	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct licrochip's		Doped Silicon (mg) Total Copper Palladium (mg) Total	7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 1.75	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified we hemical substance is absent from the list above, the che porated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL94 V0 fla //ul.com/global/eng/pages/offerings/industries/chemical: portective "tubes" in which the specific product is shipp in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the information original packing materials is true and correct to the bes pleteness and accuracy of data in this form because it he mation is often protected from disclosure as trade secre ided only as estimates of the average weight of these pa popants, metals, and non-metal materials contained within ochip Technology Incorporated does not provide any we anties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices.	via internal design contro mical substance is NOT cument, there is no cred regulatory scheme worl ummability standard for p s/plastics/ eed are made from polyvi in this form concerning to fits knowledge and by as been compiled based ts and some informatior rits and the average weig n silicon devices (silicon arranty, express or implie and its subsidiaries are c hanges to Material Conte e users' reliance on the in	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concen d-wide. alastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In flief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. Thes IC) in the finished parts. d, with respect to the information provided in this declarati	to the best of tration of the o obtain a test ld the packing corporated's s y Incorporated ided by raw m ided by raw m and raw materi se estimates d on. The exclu- ale. These are ect or indirect	Microchip Tec chemical subs report at y slip on the ou semiconducto d cannot guara aterial suppliers. Ir lo not include al suppliers. Ir lo not include sive, limited pi provided in M , consequentia	chnology stance, if uter box and r devices in antee the ers. Supplier iformation is trace levels roduct licrochip's al or	0.60	Doped Silicon (mg) Total Copper Palladium (mg) Total	7440-21-3 Total palladium coated copper (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 98 1.75 100.00	0.27
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified we hemical substance is absent from the list above, the che rporated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL94 V0 fla //ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the information original packing materials is true and correct to the bes pleteness and accuracy of data in this form because it he mation is often protected from disclosure as trade secre opants, metals, and non-metal materials contained within cochip Technology Incorporated does not provide any we anties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices. Dochip disclaims any duty to notify users of updates or cl	via internal design contro mical substance is NOT cument, there is no cred regulatory scheme worl ummability standard for p s/plastics/ eed are made from polyvi in this form concerning to fits knowledge and by as been compiled based ts and some informatior rits and the average weig n silicon devices (silicon arranty, express or implie and its subsidiaries are c hanges to Material Conte e users' reliance on the in	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen d-wide. Jastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lifer, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s nt Declarations and shall not be liable for any damages, dire	to the best of tration of the o obtain a test ld the packing corporated's s y Incorporated ided by raw m ided by raw m and raw materi se estimates d on. The exclu- ale. These are ect or indirect	Microchip Tec chemical subs report at y slip on the ou semiconducto d cannot guara aterial suppliers. Ir lo not include al suppliers. Ir lo not include sive, limited pi provided in M , consequentia	chnology stance, if uter box and r devices in antee the ers. Supplier iformation is trace levels roduct licrochip's al or	0.60	Doped Silicon (mg) Total Copper Palladium (mg) Total Tin	7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 98 1.75 100.00 % of Total Weight	0.27

Semiconductor Device Type: QXBE 12 (Lead) XQFN 2x2x0.45mm (QL) "Contained In"				nination Bas Copper Alloy			JEDEC 97 Product Markir and/or Pkg. Labeling e3			
			% Total	r						
Basic Substance	CAS Number	Sub-Component	Weight	malaart		6.10	(mg) Total	Mold Compound	% ot Total Weight	60.43
Silica, fused	60676-86-0	Mold Compound	54.387	mg/part 5,493	ppm 543.870		Silica, fused	00070.00.0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.931	0.296	29.309		Epoxy Resin	60676-86-0 Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.931	0.296	29,309		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.181	0.018	1,813		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	34.039	3.438	340.391		Carbon Diack	Total	100.00	
Nickel	7440-02-0	Lead Frame	0.908	0.092	9,078	3.61	(mg) Total	Lead Frame	% of Total Weight	35.74
Silicon	7440-02-0	Lead Frame	0.908	0.092	1.608	3.01		7440-50-8	95.24	35.74
Magnesium	7440-21-3	Lead Frame	0.036	0.016	357		Copper Nickel	7440-50-8	95.24 2.54	
Silver	7439-95-4 7440-22-4	Lead Frame	0.036	0.004	5.965		Silicon	7440-02-0 7440-21-3	2.54	
Silver	7440-22-4	Die Attach	0.597	0.060	9.040		Magnesium	7439-95-4	0.45	
Epoxy Resin	Trade secret	Die Attach	0.304	0.023	2,260		Silver	7439-95-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.230	0.023	12,200		Silver	7440-22-4 Total	100.00	
Galifum alsenide (GaAs) Gold	7440-57-5	Wire Bond	0.370	0.124	3,700		(mg) Total	Die Attach	% of Total Weight	
						0.11	, 			1.13
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100	0.111	11,000		Silver	7440-22-4	80.00	
	0.0101 g To	TOTALS:	100.000	10.100	1,000,000		Epoxy Resin	Trade secret Total	20.00 100.00	
		EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	Precoust Bire	,		0.12	(mg) Total	Chip (Die)	% of Total Weight	1.23
53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified remical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this do	via internal design controls, supp emical substance is NOT an inter ocument, there is no credible reas	lier declarations, and /or analytical test data.	to the best o	f Microchip Te	echnology	0.12	(mg) Total Gallium arsenide (GaAs)	,	% of Total Weight 100.00 100.00	1.23
53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified nemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this do below the threshold of regulatory concern for any reg ing compounds used by Microchip meet the UL94 V0 fl /ul.com/global/eng/pages/offerings/industries/chemica	via internal design controls, supp emical substance is NOT an inter ocument, there is no credible reas ulatory scheme world-wide. ammability standard for plastics.	lier declarations, and /or analytical test data. ational ingredient in the semiconductor device and, son to believe that the unavoidable impurity concent	to the best o tration of the	f Microchip Te chemical sub	echnology	0.12		1303-00-0	100.00	0.37
53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified nemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this da below the threshold of regulatory concern for any reg ing compounds used by Microchip meet the UL94 V0 fl	via internal design controls, supp emical substance is NOT an inter ocument, there is no credible reas ulatory scheme world-wide. ammability standard for plastics. (s/plastics/	lier declarations, and /or analytical test data. Itional ingredient in the semiconductor device and, son to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to	to the best o tration of the obtain a tes	f Microchip Te chemical sub t report at	echnology sstance, if any,		Gallium arsenide (GaAs)	1303-00-0 Total Wire Bond 7440-57-5	100.00 100.00 % of Total Weight 100.00	
53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified nemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this d below the threshold of regulatory concern for any reg ing compounds used by Microchip meet the UL94 V0 fl /ul.com/global/eng/pages/offerings/industries/chemica rotective "tubes" in which the specific product is ship	via internal design controls, supp emical substance is NOT an inter ocument, there is no credible reas ulatory scheme world-wide. ammability standard for plastics. Is/plastics/ ped are made from polyvinyl chlo n in this form concerning substar st of its knowledge and belief, as ias been compiled based on the r ets and some information may no arts and the average weight of an	lier declarations, and /or analytical test data. ational ingredient in the semiconductor device and, son to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to hol acces restricted by RoHS in Microchip Technology Ing of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets provion thave been provided by subcontract assemblers and ticipated significant toxic metals components. These	to the best o tration of the obtain a tes d the packin corporated's y Incorporate ided by raw r nd raw mater	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot gua material suppliers.	echnology istance, if any, outer box and or devices in rantee the iers. Supplier Information is		Gallium arsenide (GaAs) (mg) Total	1303-00-0 Total Wire Bond 7440-57-5 Total	100.00 100.00 % of Total Weight	
53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified nemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this de below the threshold of regulatory concern for any reg ing compounds used by Microchip meet the UL94 V0 fl /ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. Inchip Technology Incorporated believes the information original packing materials is true and correct to the be- leteness and accuracy of data in this form because it I mation is often protected from disclosure as trade secr	via internal design controls, supp emical substance is NOT an inter ocument, there is no credible reas ulatory scheme world-wide. ammability standard for plastics. Is/plastics/ ped are made from polyvinyl chlo n in this form concerning substar at of its knowledge and belief, as ias been compiled based on the r ets and some information may no arts and the average weight of an silicon devices (silicon IC) in the f arranty, express or implied, with	ilier declarations, and /or analytical test data. ational ingredient in the semiconductor device and, son to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to hol acces restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets provi to have been provided by subcontract assemblers an ticipated significant toxic metals components. Thes inished parts.	to the best o tration of the obtain a tes id the packin corporated's y Incorporate ided by raw r nd raw mater e estimates on. The excli	f Microchip Te chemical sub t report at g slip on the c semiconduct ed cannot gua material suppl rial suppliers. do not include usive, limited	echnology bstance, if any, buter box and or devices in rantee the iers. Supplier Information is t trace levels of product		Gallium arsenide (GaAs) (mg) Total	1303-00-0 Total Wire Bond 7440-57-5	100.00 100.00 % of Total Weight 100.00	
53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified memical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this d below the threshold of regulatory concern for any reg ing compounds used by Microchip meet the UL94 V0 fl /ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. Inchip Technology Incorporated believes the information original packing materials is true and correct to the bee leteness and accuracy of data in this form because it h mation is often protected from disclosure as trade secr ded only as estimates of the average weight of these p nts, metals, and non-metal materials contained within s chip Technology Incorporated does not provide any w mites provided by Microchip Technology Incorporated	via internal design controls, supp emical substance is NOT an inter ocument, there is no credible reas ulatory scheme world-wide. ammability standard for plastics. Is/plastics/ ped are made from polyvinyl chlo n in this form concerning substar st of its knowledge and belief, as as been compiled based on the r ets and some information may no arts and the average weight of an silicon devices (silicon IC) in the f arranty, express or implied, with and its subsidiaries are containe- thanges to Material Content Deck	lier declarations, and /or analytical test data. ational ingredient in the semiconductor device and, is son to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to hol loces restricted by RoHS in Microchip Technology Inc of the date listed in this form. Microchip Technology Inc of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets provided thave been provided by subcontract assemblers and ticipated significant toxic metals components. These inished parts. respect to the information provided in this declaration d in Microchip's standard terms and conditions of sa urations and shall not be liable for any damages, direc-	to the best o tration of the obtain a tes obtain a tes d the packin corporated's l Incorporate dided by raw nd raw mater se estimates on. The exclu ale. These ar ect or indirec	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot guan naterial suppliers. do not include usive, limited j e provided in t, consequent	echnology stance, if any, outer box and or devices in rantee the iers. Supplier Information is trace levels of product Microchip's ial or	0.04	Gallium arsenide (GaAs) (mg) Total Doped Gold	1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 100.00 % of Total Weight 100.00 100.00	0.37
3/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified emical substance is absent from the list above, the ch torated's knowledge and belief as of the date of this do below the threshold of regulatory concern for any reg ng compounds used by Microchip meet the UL94 V0 fl ul.com/global/eng/pages/offerings/industries/chemical ordective "tubes" in which the specific product is ship n "reels" may be made from PVC plastic. Thip Technology Incorporated believes the information riginal packing materials is true and correct to the bese teness and accuracy of data in this form because it h tation is often protected from disclosure as trade secr led only as estimates of the average weight of these p ts, metals, and non-metal materials contained within s chip Technology Incorporated does not provide any w notes provided by Microchip Technology Incorporated tions, sales order acknowledgement, and invoices. Chip disclaims any duty to notify users of updates or c vise, suffered by users or third parties as a result of the	via internal design controls, supp emical substance is NOT an inter ocument, there is no credible reas ulatory scheme world-wide. ammability standard for plastics. Is/plastics/ ped are made from polyvinyl chlo n in this form concerning substar st of its knowledge and belief, as as been compiled based on the r ets and some information may no arts and the average weight of an silicon devices (silicon IC) in the f arranty, express or implied, with and its subsidiaries are containe- thanges to Material Content Deck	lier declarations, and /or analytical test data. ational ingredient in the semiconductor device and, is son to believe that the unavoidable impurity concent You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to hol loces restricted by RoHS in Microchip Technology Inc of the date listed in this form. Microchip Technology Inc of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets provided thave been provided by subcontract assemblers and ticipated significant toxic metals components. These inished parts. respect to the information provided in this declaration d in Microchip's standard terms and conditions of sa urations and shall not be liable for any damages, direc-	to the best o tration of the obtain a tes obtain a tes d the packin corporated's l Incorporate dided by raw nd raw mater se estimates on. The exclu ale. These ar ect or indirec	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot guan naterial suppliers. do not include usive, limited j e provided in t, consequent	echnology stance, if any, outer box and or devices in rantee the iers. Supplier Information is trace levels of product Microchip's ial or	0.04	Gallium arsenide (GaAs) (mg) Total (mg) Total (mg) Total	Vire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 100.00 % of Total Weight 100.00 100.00 % of Total Weight	0.37

ICROCHIP Semiconductor Device	Type: QXCE 16 (Lead) XQ	FN 3x3x0.45mm (QR)		nation Base / pper Alloy (C				nogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Markir and/or Pkg. Labeling e3
		"Contained In"	% I otal			7.94	(mg) Total	Mold Compound	% ot Total Weight	44.83
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	7.54				44.05
Silica, fused	60676-86-0	Mold Compound	40.347	7.149	403,470		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	2.174	0.385	21,743		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.174	0.385	21,743		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.134	0.024	1,345 455.442		Carbon Black	1333-86-4	0.30	
Copper Nickel	7440-50-8	Lead Frame Lead Frame	45.544	8.070		=	() = ()	Total	100.00	17.00
Silicon	7440-02-0		1.215	0.215	12,146	8.47	(mg) Total	Lead Frame	% of Total Weight	47.82
Silicon Magnesium	7440-21-3 7439-95-4	Lead Frame Lead Frame	0.215	0.038	2,152 478		Copper	7440-50-8	95.24 2.54	
Silver	7439-95-4 7440-22-4	Lead Frame	0.048	0.008	478		Nickel Silicon	7440-02-0 7440-21-3	2.54	
Silver	7440-22-4	Die Attach	0.798	0.141	7,981		Magnesium	7440-21-3 7439-95-4	0.45	
Epoxy Resin	Trade secret	Die Attach Die Attach	0.728	0.129	1.820		Silver	7439-95-4 7440-22-4	0.10	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.490	0.441	24,900		Silver	7440-22-4 Total	1.07	1
Doped Gold	7440-57-5	Wire Bond	0.560	0.099	5.600	0.16	(mg) Total	Die Attach	% of Total Weight	0.91
Tin		external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.390	0.601	33,900	0.10	Silver	7440-22-4	80.00	0.91
1111	7440-51-5 Flating of	TOTALS:		17.720	1.000.000		Epoxy Resin	Trade secret	20.00	
	0.0177 g Tot		100.000	11.120	1,000,000		Lpoxy Resili	Total	100.00	1
		C (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ctive) and wit	th EU	0.44	(mg) Total	Chip (Die)	% of Total Weight	2.49
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified vi emical substance is absent from the list above, the cher worated's knowledge and belief as of the date of this doc	mply with EU Directive 2002/95/E a internal design controls, suppli nical substance is NOT an intenti ument, there is no credible reaso	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and,	to the best o	f Microchip Te	echnology	0.44	(mg) Total Gallium arsenide	Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	2.49
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified vi emical substance is absent from the list above, the cher orated's knowledge and belief as of the date of this doc i not below the threshold of regulatory concern for any in ng compounds used by Microchip meet the UL94 V0 flar	mply with EU Directive 2002/95/E/ a internal design controls, suppli nical substance is NOT an intent ument, there is no credible reaso egulatory scheme world-wide. nmability standard for plastics. Y	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concen	, to the best o ntration of the	f Microchip Te chemical sub	echnology	0.44		1303-00-0	100	
semiconductor device and its homogenous materials co- tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified vi- nemical substance is absent from the list above, the cher porated's knowledge and belief as of the date of this doc s not below the threshold of regulatory concern for any in g compounds used by Microchip meet the UL94 V0 flar /ul.com/global/eng/pages/offerings/industries/chemicals. rotective "tubes" in which the specific product is shippe ertain "reels" may be made from PVC plastic.	nply with EU Directive 2002/95/E/ a internal design controls, suppli nical substance is NOT an intent ument, there is no credible reaso regulatory scheme world-wide. nmability standard for plastics. Y plastics/	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concen ou can access the UL iQTM family of databases to	, to the best o ntration of the o obtain a test	f Microchip To chemical sub t report at	echnology ostance, if		Gallium arsenide	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vi- nemical substance is absent from the list above, the cher porated's knowledge and belief as of the date of this doc s not below the threshold of regulatory concern for any in ng compounds used by Microchip meet the UL94 V0 flar vul.com/global/eng/pages/offerings/industries/chemicals. rotective "tubes" in which the specific product is shippe	mply with EU Directive 2002/95/El a internal design controls, suppli nical substance is NOT an intent ument, there is no credible reaso regulatory scheme world-wide. mability standard for plastics. Y plastics/ d are made from polyvinyl chlori n this form concerning substanc st of its knowledge and belief, as t has been compiled based on th de secrets and some information to of these parts and the average	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concer ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to ho es restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technol ranges provided in Material Safety Data Sheets p may not have been provided by subcontract asse weight of anticipated significant toxic metals cor	to the best o ntration of the o obtain a test old the packin ncorporated's logy Incorpora provided by ra emblers and r	f Microchip Tr chemical sub t report at g slip on the o semiconduct ated cannot g aw material s aw material s	echnology ostance, if outer box or devices uarantee uppliers. uppliers.		Gallium arsenide	1303-00-0 Total Wire Bond	100 100.00 % of Total Weight	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified vi- memical substance is absent from the list above, the cher- porated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any in ng compounds used by Microchip meet the UL94 V0 flar ful.com/global/eng/pages/offerings/industries/chemicals. rotective "tubes" in which the specific product is shipper ertain "reels" may be made from PVC plastic. chip Technology Incorporated believes the information i ir original packing materials is true and correct to the be sympleteness and accuracy of data in this form because in ileir information is often protected from disclosure as tra- ation is provided only as estimates of the average weig te trace levels of dopants, metals, and non-metal materiar chip Technology Incorporated does not provide any war- nties provided by Microchip Technology Incorporated and the provided only acknowled soft and the provide any war- nties provided by Microchip Technology Incorporated and the provided only acknowled and y a	mply with EU Directive 2002/95/E/ a internal design controls, suppli nical substance is NOT an intent ument, there is no credible reaso egulatory scheme world-wide. nmability standard for plastics. Y plastics/ d are made from polyvinyl chlori n this form concerning substanc st of its knowledge and belief, as thas been compiled based on th de secrets and some information to of these parts and the average ils contained within silicon devic ranty, express or implied, with re d its subsidiaries are contained	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concen ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to ho es restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technol ranges provided in Material Safety Data Sheets p weight of anticipated significant toxic metals cor as (silicon IC) in the finished parts. spect to the information provided in this declarati	, to the best o ntration of the o obtain a test old the packin ncorporated's logy Incorpora provided by ra emblers and mponents. Th	f Microchip To chemical sub t report at g slip on the o semiconduct ated cannot g aw material su aw material su ese estimates usive, limited	echnology sstance, if outer box or devices uarantee uppliers. uppliers. d o not		Gallium arsenide	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified vi- memical substance is absent from the list above, the cher porated's knowledge and belief as of the date of this doc s not below the threshold of regulatory concern for any i ng compounds used by Microchip meet the UL94 V0 flar 'ul.com/global/eng/pages/offerings/industries/chemicalsa rotective "tubes" in which the specific product is shippe ertain "reels" may be made from PVC plastic. chip Technology Incorporated believes the information i ir original packing materials is true and correct to the be sompleteness and accuracy of data in this form because i lier information is often protected from disclosure as tra nation is provided only as estimates of the average weig	mply with EU Directive 2002/95/E/ a internal design controls, suppli nical substance is NOT an intenti ument, there is no credible reaso egulatory scheme world-wide. nmability standard for plastics. Y plastics/ d are made from polyvinyl chlori an this form concerning substance st of its knowledge and belief, as t has been compiled based on th de secrets and some information ht of these parts and the average las contained within sillicon devic ranty, express or implied, with re nd its subsidiaries are contained voices.	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concer ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to ho es restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technol e ranges provided in Material Safety Data Sheets p may not have been provided by subcontract asse weight of anticipated significant toxic metals cor es (silicon IC) in the finished parts. spect to the information provided in this declarati n Microchip's standard terms and conditions of s titons and shall not be liable for any damages, dir	, to the best o ntration of the o obtain a tes old the packin ncorporated's logy Incorpora provided by ra emblers and r mponents. Th ion. The exclu- sale. These ar	f Microchip To chemical sub t report at g slip on the o semiconduct ated cannot g aw material s aw material s ese estimates usive, limited e provided in t, consequent	echnology ostance, if puter box or devices uarantee uppliers. uppliers. is do not product	0.10	(mg) Total Doped Gold	1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 100.00	0.56

Semiconductor Device		ation Base A oper Alloy (C		Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e4		
		"Contained In"	% Total			10.05	(mg) Total	Mold Compound	% ot Total Weight	45.91
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm			•	, , , , , , , , , , , , , , , , , , ,	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	39.024	8.546	390,235		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	Mold Compound Mold Compound	3.994 2.755	0.875	39,942 27,546		Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	8.70 6.00	
Carbon Black	1333-86-4	Mold Compound	0.138	0.003	1.377		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	48,494	10.620	484,943		Calbull Black	Total		1
Iron	7439-89-6	Lead Frame	1.146	0.251	11,463	10.91	(mg) Total	Lead Frame	% of Total Weight	49.84
Phosphorous	7723-14-0	Lead Frame	0.125	0.027	1.246	10.91	Copper	7440-50-8	97.30	49.64
Zinc (Metal)	7440-44-0	Lead Frame	0.125	0.027	748		Iron	7439-89-6	2.30	
Silver	7440-22-4	Die Attach	1.529	0.335	15.288		Phosphorous	7723-14-0	0.25	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.353	0.077	3,528		Zinc (Metal)	7440-44-0	0.15	
Treated silica	Trade Secret	Die Attach	0.039	0.009	392		Zine (wetai)	Total		1
Heterocyclic organic compound	Trade Secret	Die Attach	0.039	0.009	392	0.43	(mg) Total	Die Attach	% of Total Weight	1.96
Gallium arsenide	1300-00-00	Chip (Die)	1.550	0.339	15,500	0.45	(ing) rotal Silver	7440-22-4	78	1.30
Gold	7440-57-5	Wire Bond	0.460	0.101	4.600		Acrylate resins Proprietary	Trade Secret	18	
Nickel	7440-02-0	Plating on external leads (pins)	0.265	0.058	2,646		Treated silica	Trade Secret	2	
Palladium	7440-05-3	Plating on external leads (pins)	0.014	0.003	140	Hete	erocyclic organic compound	Trade Secret	2	
Gold	7440-57-5	Plating on external leads (pins)	0.001	0.000	14		solution of game compound	Total	100.00	1
0014	1110 01 0	TOTALS		21.900	1,000,000	0.34	Total (mg)	Chip (Die)	% of Total Weight	1.55
	0.0219 g T			2	.,,	0.04				1.00
			(RoHS Recast D	irective) and v	vith EU		Doped GaAs	1300-00-00 Total	100 100.00	J
s semiconductor device and its homogenous materials active 2002/53/EC (End-of-Life Vehicles (ELV) Directive apliance with the above EU Directives has been verifie).	2/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast D	irective) and v	vith EU	0.10	Doped GaAs (mg) Total			0.46
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). d via internal design controls, chemical substance is NOT an document, there is no credible	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devic reason to believe that the unavoidable impurity o	e and, to the bes	t of Microchip	Technology	0.10	· · · · · ·	Total	100.00	0.46
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verifie chemical substance is absent from the list above, the proprated's knowledge and belief as of the date of this). d via internal design controls, chemical substance is NOT an document, there is no credible any regulatory scheme world-w flammability standard for plas	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devic reason to believe that the unavoidable impurity o ide.	and, to the bes	t of Microchip the chemical s	Technology	0.10	(mg) Total	Total Wire Bond	100.00 % of Total Weight 100	0.46
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verifie- chemical substance is absent from the list above, the e orporated's knowledge and belief as of the date of this , is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0). d via internal design controls, chemical substance is NOT an document, there is no credible any regulatory scheme world-w flammability standard for plass cals/plastics/	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devic reason to believe that the unavoidable impurity o ide. tics. You can access the UL iQTM family of databa	e and, to the bes oncentration of t ses to obtain a to	t of Microchip the chemical s est report at	Technology ubstance, if	0.10	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight 100	0.46
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verifie- chemical substance is absent from the list above, the e orporated's knowledge and belief as of the date of this , is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 :://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi). d via internal design controls, chemical substance is NOT an document, there is no credible any regulatory scheme world-w flammability standard for plas cals/plastics/ ipped are made from polyvinyl ion in this form concerning sut e best of its knowledge and be use it has been compiled based trade secrets and some inforr veight of these parts and the an	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devic reason to believe that the unavoidable impurity of ide. tics. You can access the UL iQTM family of databa chloride (PVC) plastic. "Window envelopes" used ostances restricted by RoHS in Microchip Technol lief, as of the date listed in this form. Microchip Te on the ranges provided in Material Safety Data S nation may not have been provided by subcontrac verage weight of anticipated significant toxic meta	e and, to the besion oncentration of t ses to obtain a to to hold the pack ogy Incorporated chnology Incorp eets provided b t assemblers and	t of Microchip the chemical s est report at ing slip on the l's semicondu orated cannol y raw material d raw material	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers.		(mg) Total	Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verifie- chemical substance is absent from the list above, the orporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati heir original packing materials is true and correct to the completeness and accuracy of data in this form becau upplier information is often protected from disclosure as rmation is provided only as estimates of the average w). d via internal design controls, chemical substance is NOT an document, there is no credible any regulatory scheme world-w flammability standard for plas- cals/plastics/ ipped are made from polyvinyl ion in this form concerning sub e best of its knowledge and be use it has been compiled based is trade secrets and some inforr veight of these parts and the ar- terials contained within silicon warranty, express or implied, id and its subsidiaries are cont	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devic reason to believe that the unavoidable impurity of ide. tics. You can access the UL iQTM family of databa chloride (PVC) plastic. "Window envelopes" used ostances restricted by RoHS in Microchip Technol lief, as of the date listed in this form. Microchip Te on the ranges provided in Material Safety Data S nation may not have been provided by subcontra verage weight of anticipated significant toxic meta devices (silicon IC) in the finished parts.	e and, to the besioncentration of t ses to obtain a to to hold the pack ogy Incorporated chnology Incorp neets provided b t assemblers and Is components.	t of Microchip the chemical s est report at ing slip on the l's semicondu orated cannot y raw material These estimat clusive, limite	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. es do not d product		(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verifie- chemical substance is absent from the list above, the orporated's knowledge and belief as of the date of this i, is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 :://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ic certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatin eir original packing materials is true and correct to the completeness and accuracy of data in this form becau pipiler information is often protected from disclosure as ude trace levels of dopants, metals, and non-metal ma rochip Technology Incorporated does not provide any ranties provided only Microchip Technology Incorporate). d via internal design controls, chemical substance is NOT an document, there is no credible any regulatory scheme world-w flammability standard for plas cals/plastics/ ipped are made from polyvinyl ion in this form concerning sut e best of its knowledge and be use it has been compiled based to the secrets and some inforr weight of these parts and the ar- terials contained within silicon warranty, express or implied, w d and its subsidiaries are cont d invoices.	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor devic reason to believe that the unavoidable impurity of ide. tics. You can access the UL iQTM family of databa chloride (PVC) plastic. "Window envelopes" used batances restricted by RoHS in Microchip Technol lief, as of the date listed in this form. Microchip Te on the ranges provided in Material Safety Data S nation may not have been provided by subcontrar verage weight of anticipated significant toxic meta devices (silicon IC) in the finished parts. with respect to the information provided in this de ained in Microchip's standard terms and condition Declarations and shall not be liable for any damag	e and, to the besi oncentration of t ses to obtain a to to hold the pack ogy Incorporated chnology Incorp neets provided b t assemblers and Is components. T claration. The ex us of sale. These	t of Microchip the chemical s est report at ing slip on the 's semicondu orated cannol y raw material These estimat clusive, limite are provided ect, conseque	Technology ubstance, if e outer box ctor devices guarantee suppliers. es do not d product in ential or		(mg) Total Doped Gold (mg) Total Nickel	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0	100.00 % of Total Weight 100 % of Total Weight 94.50	

Semiconductor Device Type: QDE 24 (Lead) WQFN 4x4x0.75 mm (QW)			Termination Base Alloy: Copper Alloy (Cu)				JEDEC 97 Product Markin and/or Pkg. Labeling e3			
		"Contained In"	% I otal			17.88	(mg) Total	Mold Compound	% ot Total Weight	45.6
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	17.00		•		45.0
Silica, fused	60676-86-0	Mold Compound	41.040	16.088	410,400		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.212	0.867	22,116	Epo	xy Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.212	0.867	22,116		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.137	0.054	1,368		Carbon Black		0.30	
Copper	7440-50-8	Lead Frame	47.559	18.643	475,586			Total	100.00	
Iron	7439-89-6	Lead Frame	1.170	0.459	11,698	19.51	(mg) Total	Lead Frame	% of Total Weight	49.78
Silver	7440-22-4	Lead Frame	0.948	0.372	9,483		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.062	0.024	622		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.041	0.016	411		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.858	0.336	8,580		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.198	0.078	1,980		Phosphorous	7723-14-0	0.08	
Treated silica	Trade Secret	Die Attach	0.022	0.009	220			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.022	0.009	220	0.43	(mg) Total	Die Attach	% of Total Weight	1.1
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	0.870	0.341	8,700		Silver	7440-22-4	78	
Doped Gold	7440-57-5	Wire Bond	0.380	0.149	3,800		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.270	0.890	22,700		Treated silica	Trade Secret	2	
		TOTALS:	100.000	39.200	1,000,000	Hel	terocyclic organic compound	Trade Secret	2	
	0.0392	g Total Mass						Total	100.00	
	omply with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Dire	ective) and wit	h EU Directive	0.34	(mg) Total	Chip (Die)	% of Total Weight	0.87
2/53/EC (End-of-Life Vehicles (ELV) Directive).			S Recast Dire	ective) and wit	h EU Directive	0.34	(mg) Total Gallium arsenide (GaAs)	1303-00-0	100	0.87
2/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified to chemical substance is absent from the list above, the ch proprated's knowledge and belief as of the date of this do ot below the threshold of regulatory concern for any reg	via internal design controls emical substance is NOT a cument, there is no credib ulatory scheme world-wide	, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	to the best o tration of the	f Microchip Te chemical sub	echnology .		Gallium arsenide (GaAs)	1303-00-0 Total	100 100.00	
2/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified of chemical substance is absent from the list above, the ch proprated's knowledge and belief as of the date of this do ot below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 file ://ul.com/global/eng/pages/offerings/industries/chemical	via internal design controls emical substance is NOT a cument, there is no credib ulatory scheme world-wide ammability standard for pla s/plastics/	, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen stics. You can access the UL iQTM family of databases to	to the best o tration of the obtain a tes	f Microchip Te chemical sub t report at	echnology sstance, if any,	0.34	Gallium arsenide (GaAs) (mg) Total	1303-00-0 Total Wire Bond	100 100.00 % of Total Weight	
22/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified of chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any reg Iding compounds used by Microchip meet the UL94 V0 file p://ul.com/global/eng/pages/offerings/industries/chemical	via internal design controls emical substance is NOT a cument, there is no credib ulatory scheme world-wide ammability standard for pla s/plastics/	, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	to the best o tration of the obtain a tes	f Microchip Te chemical sub t report at	echnology sstance, if any,		Gallium arsenide (GaAs)	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
22/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified u chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this dc not below the threshold of regulatory concern for any reg lding compounds used by Microchip meet the UL94 V0 file p://ul.com/global/eng/pages/offerings/industries/chemical a protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information if original packing materials is true and correct to the bee mpleteness and accuracy of data in this form because it hormation is often protected from disclosure as trade secre	via internal design controls emical substance is NOT a soument, there is no credib ulatory scheme world-wide ammability standard for pla s/plastics/ bed are made from polyving h in this form concerning si t of its knowledge and beli as been compiled based or ets and some information r arts and the average weigh	, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- stics. You can access the UL iQTM family of databases to /I chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology Im ef, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets provi nay not have been provided by subcontract assemblers an of anticipated significant toxic metals components. These	to the best o tration of the obtain a tes ld the packin corporated's y Incorporate ided by raw i nd raw matei	f Microchip Te e chemical sub t report at g slip on the o semiconducto d cannot guan material suppliers.	echnology sstance, if any, buter box and or devices in rantee the iers. Supplier Information is		Gallium arsenide (GaAs) (mg) Total	1303-00-0 Total Wire Bond	100 100.00 % of Total Weight	
I2/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified of chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this do tot below the threshold of regulatory concern for any reg lding compounds used by Microchip meet the UL94 V0 fl p://ul.com/global/eng/pages/offerings/industries/chemical a protective "tubes" in which the specific product is shipt tain "reels" may be made from PVC plastic. prochip Technology Incorporated believes the information ir original packing materials is true and correct to the bese mpleteness and accuracy of data in this form because it h ormation is often protected from disclosure as trade secr- vided only as estimates of the average weight of these p topants, metals, and non-metal materials contained withis errochip Technology Incorporated does not provide any w	via internal design controls emical substance is NOT a soument, there is no credib ulatory scheme world-wide ammability standard for pla s/plastics/ bed are made from polyving in this form concerning si t of its knowledge and beli as been compiled based or ets and some information r arts and the average weigh n silicon devices (silicon IC arranty, express or implied	, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- stics. You can access the UL iQTM family of databases to /I chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology Im ef, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets provi nay not have been provided by subcontract assemblers an of anticipated significant toxic metals components. These	to the best o tration of the obtain a tes id the packin corporated's y incorporate ided by raw i nd raw mate ie estimates on. The excli	f Microchip Te o chemical sub t report at g slip on the o semiconducto do cannot guar naterial suppli rial suppliers. do not include usive, limited f	achnology ustance, if any, puter box and or devices in rantee the iers. Supplier Information is t trace levels product		Gallium arsenide (GaAs) (mg) Total (mg) Total (mg) Total	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
2/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified of chemical substance is absent from the list above, the ch oroporated's knowledge and belief as of the date of this do to below the threshold of regulatory concern for any reg iding compounds used by Microchip meet the UL94 V0 fi bc://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bese npleteness and accuracy of data in this form because it hormation is often protected from disclosure as trade secr- vided only as estimates of the average weight of these ppi lopants, metals, and non-metal materials contained withi rrochip Technology Incorporated does not provide any wir ranties provided by Microchip Technology Incorporated brations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or c	via internal design controls emical substance is NOT a soument, there is no credib ulatory scheme world-wide ammability standard for pla s/plastics/ bed are made from polyving in this form concerning si at of its knowledge and beli as been compiled based on ets and some information r arts and the average weigh n silicon devices (silicon IC arranty, express or implied and its subsidiaries are con hanges to Material Content e users' reliance on the info	, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- stics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology Im- ef, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provi- nay not have been provided by subcontract assemblers and to f anticipated significant toxic metals components. These c) in the finished parts. with respect to the information provided in this declaration.	to the best o tration of the obtain a tes corporated's y incorporate dided by raw ind raw mate se estimates on. The excli ale. These ar ect or indirec	f Microchip Te e chemical sub t report at g slip on the o semiconduct d cannot guar material suppli rial suppliers. do not include usive, limited p e provided in i	achnology stance, if any, buter box and or devices in rantee the lers. Supplier Information is e trace levels product Microchip's ial or	0.15	Gallium arsenide (GaAs) (mg) Total (mg) Total (mg) Total	1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 % of Total Weight 100.00	0.38

Semiconductor Device Type: QR 16 (Lead) QSOP (H) Basic Substance CAS Number Silica, vitreous 60676-86-0 Epoxy Resin (No bromine, No diantimony trioxide) Trade Secret Phenolic Resin (No bromine, No diantimony trioxide) Trade Secret Epoxy, Cresol Novolac 29600-82-2 Carbon Black 1333-86-4 Copper 7440-50-8 Iron 7439-89-6 Zinc 7440-66-6 Phosphorous 7723-14-0 Silver 7440-22-4 Epoxy resin Trade Secret Metal oxide Trade Secret Gold 7440-21-3 Gold 7440-57-5 Tin 7440-57-5 Silicon 7440-57-5 Gold 7440-57-5 Ocold 7440-57-5 Oranta-butyrolactone 96-48-0 Silicon 7440-57-5 Tin 7440-57-5 Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier of a semiconduct) "Contained In" Sub-Component Mold Compound Mold Compound Mold Compound Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame Lead Frame Lead Frame	% lotal Weight 49.300 3.553 3.553 1.421 0.174 0.174 35.893 0.883 0.716	mg/part 41.225 2.971 2.971 1.188 0.145 30.014	ppm 493,000 35,525 35,525	48.50	(mg) Total Silica, vitreous	Mold Compound		e3
Silica, vitreous 60676-86-0 Epoxy Resin (No bromine, No diantimony trioxide) Trade Secret Phenolic Resin (No B / CL SbO3, No diantimony trioxide) Trade Secret Epoxy, Cresol Novolac 29690-82-2 Carbon Black 1333-86-4 Copper 7440-50-8 Iron 7439-89-6 Silver 7440-22-4 Zinc 7440-66-6 Phosphorous 7723-14-0 Silver 7440-22-4 Epoxy resin Trade Secret Metal oxide Trade Secret Garma-butyrolactone 96-48-0 Silicon 7440-27-5 Tin 7440-67-5 Old 7440-57-5 Silicon 7440-67-5 Tin 7440-67-5 Old 7440-67-5 Silicon 7440-67-5 Tin 7440-31-5 Plating on exter 0.0836 g Total N his semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (F birective 2002/53/EC (End-of-Life Vehicles (EL V) Directive). compliance with the abo	Sub-Component Mold Compound Mold Compound Mold Compound Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame	Weight 49.300 3.553 3.553 1.421 0.174 35.893 0.883 0.716	41.225 2.971 2.971 1.188 0.145	493,000 35,525	48.50		Mold Compound		
Silica, vitreous 60676-86-0 Epoxy Resin (No bromine, No diantimony trioxide) Trade Secret Phenolic Resin (No B / CL SbO3, No diantimony trioxide) Trade Secret Epoxy, Cresol Novolac 29690-82-2 Carbon Black 1333-86-4 Copper 7440-50-8 Iron 7439-89-6 Silver 7440-22-4 Zinc 7440-66-6 Phosphorous 7723-14-0 Silver 7440-22-4 Epoxy resin Trade Secret Metal oxide Trade Secret Garma-butyrolactone 96-48-0 Silicon 7440-27-5 Tin 7440-67-5 Old 7440-57-5 Silicon 7440-67-5 Tin 7440-67-5 Old 7440-67-5 Silicon 7440-67-5 Tin 7440-31-5 Plating on exter 0.0836 g Total N his semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (F birective 2002/53/EC (End-of-Life Vehicles (EL V) Directive). compliance with the abo	Mold Compound Mold Compound Mold Compound Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame Lead Frame	49.300 3.553 3.553 1.421 0.174 35.893 0.883 0.716	41.225 2.971 2.971 1.188 0.145	493,000 35,525		Cilico viterese		% ot Total Weight	58
Epoxy Resin (No Br/CL SbO3, No diantimony trioxide) Trade Secret Phenolic Resin (No Br/CL SbO3, No diantimony trioxide) Trade Secret Epoxy, Cresol Nevolac 29690-82-2 Carbon Black 1333-86-4 Copper 7440-50-8 Iron 7439-89-6 Silver 7440-66-6 Phosphorous 77723-14-0 Silver 7440-62-4 Epoxy resin Trade Secret Metal oxide Trade Secret Metal oxide Trade Secret Gald 7440-21-3 Gold 7440-21-5 Tin 7440-21-5 Depoxy Train 7440-21-3 Gold 7440-21-5 Depox Train 7440-21-5	Mold Compound Mold Compound Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame Lead Frame	3.553 3.553 1.421 0.174 35.893 0.883 0.716	2.971 2.971 1.188 0.145	35,525			60676-86-0	85.00	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Trade Secret Epoxy, Cresol Novolac 29690-682-2 Carbon Black 1333-86-4 Copper 7440-50-8 Iron 7439-89-6 Silver 7440-62-4 Zinc 7440-62-4 Phosphorous 7723-14-0 Silver 7440-62-6 Phosphorous 7723-14-0 Silver 7440-62-6 Phosphorous 7723-14-0 Silver 7440-22-4 Epoxy resin Trade Secret Metal oxide Trade Secret Gold 7440-21-3 Gold 7440-57-5 Tin 7440-57-5 Tin 7440-57-5 Old 7440-57-5 Tin 7440-57-5 Tin 7440-57-5 Tin 7440-57-5 Tin 7440-57-5 Tin 7440-57-5 Plating on exter 0.0836 g Total M ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the	Mold Compound Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame Lead Frame	3.553 1.421 0.174 35.893 0.883 0.716	2.971 1.188 0.145			Epoxy Resin	Trade Secret	6.13	1
Epoxy, Cresol Novolac 29690-82-2 Carbon Black 1333-86-4 Copper 7440-60-8 Iron 7439-89-6 Silver 7440-66-6 Phosphorous 7723-14-0 Silver 7440-22-4 Epoxy resin Trade Secret Metal oxide Trade Secret Gamma-butyrolactone 96-48-0 Silicon 7440-21-3 Gold 7440-21-5 Tin 7440-31-5 Plang on exter 0.0836 g Total N s semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (R ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentiona orpoparted's knowledge and belief as of the date of this document, there is no credible reason to r, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You solution/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from po	Mold Compound Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame	1.421 0.174 35.893 0.883 0.716	1.188 0.145			Phenolic Resin	Trade Secret	6.13	1
Carbon Black 1333-86-4 Copper 7440-50-8 Iron 7439-89-6 Silver 7440-66-6 Phosphorous 7723-14-0 Silver 7440-66-6 Phosphorous 7723-14-0 Silver 7440-66-6 Phosphorous 7723-14-0 Silver 7440-21-4 Epoxy resin Trade Secret Metal oxide Trade Secret Gamma-butyrolactone 96-48-0 Silicon 7440-21-3 Gold 7440-21-3 <td>Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame</td> <td>35.893 0.883 0.716</td> <td>0.145</td> <td>14,210</td> <td></td> <td>Epoxy, Cresol Novolac</td> <td>29690-82-2</td> <td>2.45</td> <td>1</td>	Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame	35.893 0.883 0.716	0.145	14,210		Epoxy, Cresol Novolac	29690-82-2	2.45	1
Iron 7439-89-6 Silver 7440-22-4 Zinc 7440-66-6 Phosphorous 7723-14-0 Silver 7440-22-4 Epoxy resin Trade Secret Metal oxide Trade Secret Gamma-butyrolactone 96-48-0 Silicon 7440-21-3 Gold 7440-21-5 Gold 7440-21-5 Gold 7440-21-5 Gold 7440-31-5 Plating on exter 0.0836 g Total N s semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentiona orporated's knowledge and belief as of the date of this document, there is no credible reason to t, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You output-global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic.	Lead Frame Lead Frame Lead Frame	0.883 0.716	20.014	1,740		Carbon Black	1333-86-4	0.30	1
Silver 7440-22-4 Zinc 7440-66-6 Phosphorous 7723-14-0 Silver 7440-66-6 Phosphorous 7723-14-0 Silver 7440-22-4 Epoxy resin Trade Secret Metal oxide Trade Secret Gamma-butyrolactone 96-48-0 Silicon 7440-21-3 Gold 7440-21-3 Gold 7440-31-5 Tin 7440-31-5 Plating on exter 0.0836 g Cold 7440-31-5 Plating on exter 0.0836 g Cold 7440-31-5 Plating on exter 0.0836 g Cold 7440-57-5 Tin 7440-57-5 Plating on exter 0.0836 g Dock/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intention orporated's knowledge and belief as of the date of this document, there is no credible reason to r, is not below the threshold of r	Lead Frame Lead Frame	0.716	30.014	358,934			Total	100.00	
Zinc 7440-66-6 Phosphorous 7723-14-0 Silver 7740-22-4 Epoxy resin Trade Secret Metal oxide Trade Secret Gamma-butyrolactone 96-48-0 Silicon 7440-27-3 Gold 7440-27-5 Tin 7440-27-5 Tin 7440-37-5 Oold 7440-37-5 Tin 7440-31-5 Plating on exter 0.0836 g Total M s semiconductor device and its homogenous materials comply with EU Directive 2002/55/EC (Rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentiona orporated's knowledge and belief as of the date of this document, there is no credible reason to vi, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Uding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You out/ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be mad	Lead Frame		0.738	8,829	31.42	(mg) Total	Lead Frame	% of Total Weight	37.57
Phosphorous 7723-14-0 Silver 7740-22-4 Epoxy resin Trade Secret Metal oxide Trade Secret Gamma-butyrolactone 96-48-0 Silicon 7440-21-3 Gold 7440-21-3 Gold 7440-21-3 Gold 7440-21-3 Gold 7440-31-5 Plating on exter 0.0836 g Total N s semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentiona orporated's knowledge and belief as of the date of this document, there is no credible reason to r, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You 's/ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tai "reels" may be made from PVC plastic. errochip Technology Incorporated believes the information in this form concerning substances r ir original packing mate			0.598	7,157		Copper	7440-50-8	95.54	1
Silver 7440-22-4 Epoxy resin Trade Secret Metal oxide Trade Secret Gamma-butyrolactone 96-48-0 Silicon 7440-21-3 Gold 7440-27-5 Tim 7440-21-3 Gold 7440-27-5 Tin 7440-27-5 Tin 7440-27-5 Silicon 7440-31-5 Plating on exter 0.0836 g Total M s semiconductor device and its homogenous materials comply with EU Directive 2002/55/EC (Factive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentiona orporated's knowledge and belief as of the date of this document, there is no credible reason to , is not below the threshold of regulatory concern for any regulatory scheme world-wide. diding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You to op/lul.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. <	Lead Frame	0.047	0.039	470		Iron	7439-89-6	2.35	1
Epoxy resin Trade Secret Metal oxide Trade Secret Gamma-butyrolactone 96-48-0 Silicon 7440-21-3 Gold 7440-21-3 Gold 7440-31-5 Tin 7440-31-5 Billicon 7440-31-5 Solid 7440-31-5 Tin 7440-31-5 Billicon 7440-31-5 Tin 7440-31-5 Plating on exter 0.0836 g Total N s semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (R ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentiona orporated's knowledge and belief as of the date of this document, there is no credible reason to r, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You solution/globalfeng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "re	Loau I Iailie	0.031	0.026	310		Silver	7440-22-4	1.91	1
Metal oxide Trade Secret Gamma-butyrolactone 96-48-0 Silicon 7440-21-3 Gold 7440-21-3 Gold 7440-57-5 Tin 7440-31-5 Plating on exter 0.0836 g semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentions orporated's knowledge and belief as of the date of this document, there is no credible reason to r, is not below the threshold of regulatory concern for any regulatory scheme world-wide. iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You us/ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in this form concerning substances r rignal packing materials is true and correct to the best of its knowledge and belief, as of the	Die Attach	0.222	0.186	2,220		Zinc	7440-66-6	0.13	1
Gamma-butyrolactone 96-48-0 Silicon 7440-21-3 Gold 7440-57-5 Tin 7440-57-5 Output 7440-57-5 Tin 7440-57-5 Output 0.0836 g Total M is semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (Ed-of-Life Vehicles (ELV) Directive). 0.0836 g total M mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentional orporated's knowledge and belief as of the date of this document, there is no credible reason to t, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You or plul.com/global/eng/pages/offerings/industries/chemicals/plastics/ a protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances r if original packing materials is true and correct to the best of its knowledge and belief, as of the protected from disclosure as trade secrets and some information may not has	Die Attach	0.060	0.050	600		Phosphorous	7723-14-0	0.08	1
Silicon 7440-21-3 Gold Gold 7440-57-5 Tin Plating on exter 0.0836 g Total N 0.0836 g Total N s semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). 0.0836 g Total N mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentiona orporated's knowledge and belief as of the date of this document, there is no credible reason to t, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You collulow/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances r ir original packing materials is true and correct to the best of its knowledge and belief, as of the mpleteness and accuracy of data in this form because it has been compiled based on the range ormation is often protected from disclosure as trade secrets and some information may not has	Die Attach	0.009	0.008	90			Total	100.00	
Gold 7440-57-5 Plating on exter 0.0836 g Total N s semiconductor device and its homogenous materials comply with EU Directive 2002/55/EC (Rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentiona or readible reason to orporated's knowledge and belief as of the date of this document, there is no credible reason to is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You op://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances r crochip Technology Incorporated believes the information in this dome information specific, as of the protected from disclosure as trade secrets and some information may not has	Die Attach	0.009	0.008	90	0.25	(mg) Total	Die Attach	% of Total Weight	0.3
Tin 7440-31-5 Plating on exter 0.0836 g Total N s semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (Edd-of-Life Vehicles (ELV) Directive). Internal design controls, supplier d mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentional orporated's knowledge and belief as of the date of this document, there is no credible reason to r, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You ro/Jul.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. errochip Technology Incorporated believes the information in this form concerning substances r ir original packing materials is true and correct to the best of its knowledge and belief, as of the mpleteness and accuracy of data in this form because it has been compiled based on the range ormation is often protected from disclosure as trade screets and some information may not has	Chip (Die)	1.760	1.472	17,600		Silver	7440-22-4	74	
0.0836 g Total N is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (F ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d is chemical substance is absent from the list above, the chemical substance is NOT an intentional orporated's knowledge and belief as of the date of this document, there is no credible reason to y, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You re <i>J/ULcom/global/eng/pages/offerings/industries/chemicals/plastics/</i> e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances r ir original packing materials is true and correct to the best of its knowledge and belief, as of the mpleteness and accuracy of data in this form because it has been compiled based on the range ormation is often protected from disclosure as trade secrets and some information may not has	Wire Bond	0.600	0.502	6,000		Epoxy resin	Trade Secret	20	1
is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (R ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentional orporated's knowledge and belief as of the date of this document, there is no credible reason to <i>t</i> , is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You op://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ a protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic.	nal leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.770	1.480	17,700		Metal oxide	Trade Secret	3	1
s semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (F active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentional orporated's knowledge and belief as of the date of this document, there is no credible reason to r, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You fo cull.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances ra ir original packing materials is true and correct to the best of its knowledge and belief, as of the npleteness and accuracy of data in this form because it has been compiled based on the range ormation is often protected from disclosure as trade secrets and some information may not has	TOTALS:	100.000	83.620	1,000,000		Gamma-butyrolactone	96-48-0	3	1
active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via internal design controls, supplier d chemical substance is absent from the list above, the chemical substance is NOT an intentional orporated's knowledge and belief as of the date of this document, there is no credible reason to i, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You <i>cylul.com/global/eng/pages/offerings/industries/chemicals/plastics/</i> protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. prochip Technology Incorporated believes the information in this form concerning substances r ir original packing materials is true and correct to the best of its knowledge and belief, as of the npleteness and accuracy of data in this form because it has been compiled based on the range ormation is often protected from disclosure as trade secrets and some information may not hav	ass						Total	100.00	
chemical substance is absent from the list above, the chemical substance is NOT an intentiona orporated's knowledge and belief as of the date of this document, there is no credible reason to <i>y</i> , is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You <i>p</i> ://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ a protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances r ir original packing materials is true and correct to the best of its knowledge and belief, as of the mpleteness and accuracy of data in this form because it has been compiled based on the range ormation is often protected from disclosure as trade secrets and some information may not hav	HS Directive), EU Directive 2011/65/EU (Rol	HS Recast Direc	tive) and with	EU	1.47	Total (mg)	Chip (Die)	% of Total Weight	1.76
corporated's knowledge and belief as of the date of this document, there is no credible reason to y, is not below the threshold of regulatory concern for any regulatory scheme world-wide. olding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You in p//ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances r pir original packing materials is true and correct to the best of its knowledge and belief, as of the mpleteness and accuracy of data in this form because it has been compiled based on the range ormation is often protected from disclosure as trade secrets and some information may not hav	clarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	1
e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances r ir original packing materials is true and correct to the best of its knowledge and belief, as of the mpleteness and accuracy of data in this form because it has been compiled based on the range ormation is often protected from disclosure as trade secrets and some information may not hav	believe that the unavoidable impurity conce	entration of the	chemical subs		0.50	(Win David	0/ -6 T-4-1 W-3-1-4	
tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in this form concerning substances r roriginal packing materials is true and correct to the best of its knowledge and belief, as of the apleteness and accuracy of data in this form because it has been compiled based on the range ormation is often protected from disclosure as trade secrets and some information may not hav			•		0.50	(mg) Total	Wire Bond	% of Total Weight	0.6
r original packing materials is true and correct to the best of its knowledge and belief, as of the pleteness and accuracy of data in this form because it has been compiled based on the range rmation is often protected from disclosure as trade secrets and some information may not hav	VC) plastic. "Window envelopes" used to h	old the packing	slip on the ou	iter box and		Doped Gold	7440-57-5	100	l
dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the fini	date listed in this form. Microchip Technolo provided in Material Safety Data Sheets pro	gy Incorporated vided by raw m and raw materi	l cannot guara aterial supplie al suppliers. Ir	antee the ers. Supplier nformation is			Total	100.00	
crochip Technology Incorporated does not provide any warranty, express or implied, with respe rranties provided by Microchip Technology Incorporated and its subsidiaries are contained in N otations, sales order acknowledgement, and invoices.					1.48	(mg) Total	Plating on external eads (pins) - Matte Tin / annealed at 150°C for 1 our	% of Total Weight	1.77
crochip disclaims any duty to notify users of updates or changes to Material Content Declaratio rerwise, suffered by users or third parties as a result of the users' reliance on the information in this Certificate of Compliance for semiconductor products.	shed parts.					Tin	7440-31-5	100.00	
	shed parts. It to the information provided in this declara icrochip's standard terms and conditions of Is and shall not be liable for any damages, d		arty test repor				Total	100.00	1

Semiconductor Device Type: OA and SN 08 (Lead) (SOIC) (Small Outline -150mil) (C2) "Contained In"				nation Base A pper Alloy (C			JEDEC 97 Product Markin and/or Pkg. Labeling e3			
			% Iotal	1					ļ	
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	62.24	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	54.096	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	4,774	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	3.181	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.193	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	7.825	100.314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.192	2.468	8.19	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.156	2,000	0.10	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.010	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.007	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.439	5,625		Zinc	7440-22-4	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.082	1.050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.044	563		1 hosphorous	Total		1
Modified Amine	827-43-0	Die Attach	0.036	0.044	263	0.59	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	5.850	75.000	0.59				0.75
							Silver (Ag)	7440-22-4	75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.153	1,965		Modified Epoxy Resin	13561-08-5	14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)		0.003	35	D	iglycidylether of bisphenol-F	54208-63-8	8	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.975	12,500		Modified Amine			
		TOTALS:	100.000	78.000	1,000,000			Total		
	0.0780	g Total Mass				5.85	Total (mg)	Chip (Die)	% of Total Weight	7.5
ance with the above FU Directives has been verified via inter	nal design contro	Is supplier declarations and /or analytical test data						Total	100.00	
emical substance is absent from the list above, the chemical s orated's knowledge and belief as of the date of this document	substance is NOT t, there is no credi	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer				0.16	(mg) Total	Total Wire Bond - Copper, palladium coated (CuPd)	100.00 % of Total Weight	0.2
emical substance is absent from the list above, the chemical s orated's knowledge and belief as of the date of this document s not below the threshold of regulatory concern for any regular ng compounds used by Microchip meet the UL94 V0 flammabi	substance is NOT t, there is no credi tory scheme work	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide.	tration of the	chemical subs		0.16	(mg) Total Copper	Wire Bond - Copper, palladium		0.2
emical substance is absent from the list above, the chemical s orated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regular og compounds used by Microchip meet the UL94 V0 flammabi ul.com/global/eng/pages/offerings/industries/chemicals/plastic rotective "tubes" in which the specific product is shipped are i	substance is NOT t, there is no creditory scheme work lity standard for p cs/	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL iQTM family of databases to	tration of the	chemical subs	stance, if	0.16		Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
bliance with the above EU Directives has been verified via inter memical substance is absent from the list above, the chemical s porated's knowledge and belief as of the date of this document s not below the threshold of regulatory concern for any regular ng compounds used by Microchip meet the UL94 V0 flammabi (ul.com/global/eng/pages/offerings/industries/chemicals/plastic rotective "tubes" in which the specific product is shipped are in n "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in this original packing materials is true and correct to the best of its 1 leteness and accuracy of data in this form because it has been nation is often protected from disclosure as trade secrets and ded only as estimates of the average weight of these parts and pants, metals, and non-metal materials contained within silicor	substance is NOT t, there is no credi- tory scheme world lity standard for p cs/ made from polyvin form concerning knowledge and be compiled based the average weig	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	tration of the o obtain a test Id the packing corporated's : y Incorporated ided by raw m nd raw materi	chemical subs report at g slip on the or semiconducto d cannot guara aterial suppli al suppliers. In	stance, if uter box and or devices in antee the ers. Supplier nformation is	0.16	Copper	Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	% of Total Weight	0.2
nemical substance is absent from the list above, the chemical s porated's knowledge and belief as of the date of this document s not below the threshold of regulatory concern for any regulat ng compounds used by Microchip meet the UL94 V0 flammabi (ul.com/global/eng/pages/offerings/industries/chemicals/plastic rotective "tubes" in which the specific product is shipped are in n "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in this original packing materials is true and correct to the best of its I leteness and accuracy of data in this form because it has been mation is often protected from disclosure as trade secrets and ded only as estimates of the average weight of these parts and	substance is NOT t, there is no creditory scheme work lity standard for p cs/ made from polyvie form concerning and knowledge and be some information the average weig n devices (silicon express or implie subsidiaries are con	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer 4-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lifer, as of the date listed in this form. Microchip Technology In on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of s	tration of the o obtain a test Id the packing corporated's i y Incorporated ided by raw m nd raw materi se estimates d ion. The exclu: iale. These are	chemical subs report at g slip on the or semiconducto d cannot guara aterial supplians. In lo not include sive, limited p provided in N	uter box and r devices in antee the ers. Supplier nformation is trace levels roduct hicrochip's	0.16	Copper	Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight	0.2

Semiconductor Device Typ		ination Base opper Alloy (ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e4				
) SOIC 3.90mm(.150in) (3B) "Contained In"	% Total			45.00	(Mold Compound	% ot Total	60
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	45.00	(mg) Total	-	Weight	60
Silica, vitreous	60676-86-0	Mold Compound	51.000	38.250	510,000		Silica, vitreous		85.0000	
Epoxy Resin (No bromine, No diantimony trioxide) Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret Trade Secret	Mold Compound Mold Compound	3.675 3.675	2.756 2.756	36,750 36,750		Epoxy Resin Phenolic Resin		6.1250 6.1250	
Epoxy. Cresol Novolac	29690-82-2	Mold Compound	1.470	1.103	14,700		Epoxy, Cresol Novolad		2,4500	
Carbon Black	1333-86-4	Mold Compound	0.180	0.135	1,800		Carbon Black		0.3000	
Copper	7440-50-8	Lead Frame	30.572	22.929	305,720			Total	100.00	
Iron	7439-89-6	Lead Frame	0.752	0.564	7,520	24.00	(mg) Total	Lead Frame	% of Total Weight	32
Silver	7440-22-4	Lead Frame	0.610	0.457	6.096		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.040	0.030	400		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.026	0.020	264		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.059	0.044	592		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.016	0.012	160		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.002	0.002	24			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.002	0.002	24	0.06	(mg) Total	Die Attach	% of Total Weight	0.08
Silicon	7440-21-3	Chip (Die)	4.820	3.615	48,200		Silver	7440-22-4	74	
Doped Gold	7440-57-5	Wire Bond	0.100	0.075	1,000		Epoxy resin	Trade Secret	20	
Nickel	7440-02-0	Plating on external leads (pins)	2.835	2.126	28,350		Metal oxide	Trade Secret	3	
Palladium	7440-05-3	Plating on external leads (pins)	0.150	0.113	1,500		Gamma-butyrolactone	96-48-0	3	
Gold	7440-57-5	Plating on external leads (pins)	0.015	0.011	150			Total	100.00	
		TOTALS:				3.62			% of Total	
			100.000	75.000	1,000,000	3.02	(mg) Total	Chip (Die)	Weight	4.82
	ly with EU Directive 2	g Total Mass	100.000			3.02	(mg) Total Doped Silicon	Chip (Die) 7440-21-3 Total		4.82
semiconductor device and its homogenous materials comp with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Dir pliance with the above EU Directives has been verified via i	ly with EU Directive 2 rective).	g Total Mass 002/95/EC (RoHS Directive), EU Directi	ve 2011/65/E	U (RoHS Reca		0.08		7440-21-3	Weight 100	0.1
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Dir	ly with EU Directive 2 rective). nternal design control cal substance is NOT : f the date of this docu	g Total Mass 002/95/EC (RoHS Directive), EU Directi Is, supplier declarations, and /or analy an intentional ingredient in the semico iment, there is no credible reason to b	ve 2011/65/E tical test data nductor devi elieve that th	U (RoHS Reca n. ce and, to the	ast Directive)		Doped Silicon	7440-21-3 Total	Weight 100 100.00 % of Total	
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Dir pliance with the above EU Directives has been verified via i chemical substance is absent from the list above, the chemic ochip Technology Incorporated's knowledge and belief as o	ly with EU Directive 2 rective). nternal design control cal substance is NOT : f the date of this docu e threshold of regulato nability standard for p	J Total Mass 0002/95/EC (RoHS Directive), EU Directi is, supplier declarations, and /or analy an intentional ingredient in the semico iment, there is no credible reason to b bry concern for any regulatory scheme	ve 2011/65/E tical test data nductor devi elieve that th world-wide.	U (RoHS Reca n. ce and, to the e unavoidable	ast Directive) e best of e impurity		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	Weight 100 100.00 % of Total Weight	
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Dir pliance with the above EU Directives has been verified via in themical substance is absent from the list above, the chemic ochip Technology Incorporated's knowledge and belief as o tentration of the chemical substance, if any, is not below the ling compounds used by Microchip meet the UL94 V0 flamm	ly with EU Directive 2 rective). Internal design control cal substance is NOT : f the date of this docu threshold of regulato nability standard for p micals/plastics/ are made from polyvin	J Total Mass 0002/95/EC (RoHS Directive), EU Directi is, supplier declarations, and /or analy an intentional ingredient in the semico imment, there is no credible reason to b bry concern for any regulatory scheme lastics. You can access the UL iQTM fa	ve 2011/65/E tical test data nductor devi elieve that th world-wide. amily of datal	U (RoHS Reca L. ce and, to the e unavoidable bases to obtai	ast Directive) e best of e impurity in a test		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	Weight 100 100.00 % of Total Weight 100.00	
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Din pliance with the above EU Directives has been verified via in themical substance is absent from the list above, the chemic ochip Technology Incorporated's knowledge and belief as o centration of the chemical substance, if any, is not below the ling compounds used by Microchip meet the UL94 V0 flamm rt at http://ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is shipped	ly with EU Directive 2 rective). Internal design control cal substance is NOT if the date of this doct. threshold of regulato ability standard for pi micals/plastics/ are made from polyvin stic. this form concerning e and correct to the be ad accuracy of data in Supplier information i rerial suppliers. Inform nents. These estimate	g Total Mass 002/95/EC (RoHS Directive), EU Directi ls, supplier declarations, and /or analy an intentional ingredient in the semico ment, there is no credible reason to b ory concern for any regulatory scheme lastics. You can access the UL iQTM fa nyl chloride (PVC) plastic. "Window er substances restricted by RoHS in Micr ist of its knowledge and belief, as of th this form because it has been compile soften protected from disclosure as t hation is provided only as estimates of	ve 2011/65/E tical test data nductor devi ellieve that th world-wide. amily of datal velopes" use ochip Techne e date listed d based on t rade secrets the average	U (RoHS Reca ce and, to the e unavoidable bases to obtain ed to hold the blogy Incorpo in this form. If he ranges pro- and some inff weight of the:	ast Directive) best of bimpurity in a test packing slip rated's Microchip ovided in ormation may se parts and	0.08	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external	Weight 100 100.00 % of Total 100.00 100.00 % of Total	0.1
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Dir pliance with the above EU Directives has been verified via in themical substance is absent from the list above, the chemic ochip Technology Incorporated's knowledge and belief as o centration of the chemical substance, if any, is not below the ling compounds used by Microchip meet the UL94 V0 flamm rt at http://ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is shipped to outer box and certain "reels" may be made from PVC plan ochip Technology Incorporated believes the information in to icconductor devices in their original packing materials is true nology Incorporated cannot guarantee the completeness an rial Safety Data Sheets provided by raw material suppliers. nave been provided by subcontract assemblers and raw mat	ly with EU Directive 2 rective). Internal design control cal substance is NOT if the date of this doct. e threshold of regulato ability standard for pi micals/plastics/ are made from polyvin stic. this form concerning e and correct to the be ad accuracy of data in Supplier information i rerial suppliers. Inform onents. These estimate	g Total Mass 002/95/EC (RoHS Directive), EU Directi is, supplier declarations, and /or analy an intentional ingredient in the semico iment, there is no credible reason to b ory concern for any regulatory scheme lastics. You can access the UL iQTM fa nyl chloride (PVC) plastic. "Window er substances restricted by RoHS in Micr st of its knowledge and belief, as of th this form because it has been compile s often protected from disclosure as t tation is provided only as estimates of as do not include trace levels of dopar d, with respect to the information prov bisdiaries are contained in Microchip'	ve 2011/65/E tical test data nductor devi elieve that th world-wide. amily of datal velopes" use ochip Techno e date listed db based on t rade secrets the average ths, metals, an ided in this d	U (RoHS Reca ce and, to the e unavoidable bases to obtain bad to hold the blogy Incorpo in this form. I he ranges pro- and some info- meight of the hd non-metal leclaration. Th	ast Directive) ast Directive) best of impurity in a test packing slip vided in ormation may se parts and materials he exclusive,	0.08	mg) Total Doped Gold (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	Weight 100 100.00 % of Total 100.00 100.00 % of Total Weight	0.1
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Dir bliance with the above EU Directives has been verified via in memical substance is absent from the list above, the chemic chip Technology Incorporated's knowledge and belief as o entration of the chemical substance, if any, is not below the ng compounds used by Microchip meet the UL94 V0 flamm t at http://ul.com/global/eng/pages/offerings/industries/che rotective "tubes" in which the specific product is shipped a outer box and certain "reels" may be made from PVC plar chip Technology Incorporated believes the information in to conductor devices in their original packing materials is true nology Incorporated cannot guarantee the completeness ar ial Safety Data Sheets provided by raw material suppliers. ave been provided by subcontract assemblers and raw mat rerage weight of anticipated significant toxic metals compor ined within silicon devices (silicon IC) in the finished parts chip Technology Incorporated does not provide any warrant d product warranties provided by Microchip Technology Incorporated provided by Subcontract action to the finished parts	ly with EU Directive 2 rective). Internal design control cal substance is NOT : f the date of this docu threshold of regulato hability standard for pi micals/plastics/ are made from polyvin stic. this form concerning : and correct to the be ad accuracy of data in Supplier information i terial suppliers. Inform onents. These estimate the standard and its su acknowledgement, an ges to Material Conter a result of the users'	g Total Mass 002/95/EC (RoHS Directive), EU Directi ls, supplier declarations, and /or analy an intentional ingredient in the semico iment, there is no credible reason to b ory concern for any regulatory scheme lastics. You can access the UL iQTM fa nyl chloride (PVC) plastic. "Window er substances restricted by RoHS in Micr st of its knowledge and belief, as of th this form because it has been compile s often protected from disclosure as ti ation is provided only as estimates of as do not include trace levels of dopar d, with respect to the information prov bsidiaries are contained in Microchip' d invoices.	ve 2011/65/E tical test data nductor devi elieve that th world-wide. amily of datal velopes" use ochip Techne e date listed ed based on t rade secrets a the average ts, metals, an ided in this of s standard te for any dama	U (RoHS Reca ce and, to the e unavoidable bases to obtain ad to hold the blogy Incorponin this form. I he ranges pro- and some infor- weight of the rand non-metal leclaration. The rms and condor ges, direct or	ast Directive) e best of e impurity in a test packing slip rated's Microchip ovided in ormation may se parts and materials he exclusive, litions of indirect,	0.08	Doped Silicon (mg) Total Doped Gold (mg) Total Nickel	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0	Weight 100 100.00 % of Total 100.00 100.00 100.00 % of Total Weight 94.50	0.1

Semiconductor Device Type: SL 14 (Lead) SOIC (Small Outline - 150mil) (D3/DG) Contained In*				nation Base / pper Alloy (C	-		JEDEC 97 Product Marking and/or Pkg. Labeling e3			
		"Contained In"	% I otal	r						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	114.27	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	99.315	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	8,765	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	5.839	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.354	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	14.365	100.314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.353	2,468	15.04	(mg) Total	Lead Frame	% of Total Weight	
Silver	7440-22-4	Lead Frame	0.200	0.286	2.000	1010-1	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.019	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.012	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.806	5.625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.150	1.050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.081	563			Total		
Modified Amine	827-43-0	Die Attach	0.026	0.038	263	1.07	(mg) Total	Die Attach	% of Total Weight	
Silicon	7440-21-3	Chip (Die)	7.500	10.740	75.000	1.07	Silver (Ag)	7440-22-4	75.00	0.75
Doped Gold	7440-21-5	Wire Bond	0.200	0.286	2.000		Modified Epoxy Resin	13561-08-5	14.00	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.790	12,500		Diglycidylether of bisphenol-	54208-63-8	7.50	
101	7440-31-3	TOTALS:		143.200	1.000.000		Modified Amine	827-43-0	3.50	
	0.4.400		100.000	140.200	1,000,000		Woullied Amile	Total	100.00	
		g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via ini			S Recast Dire	ctive) and wi	th EU	10.74	(mg) Total Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via im	ernal design controls	, supplier declarations, and for analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemical Incorporated's knowledge and belief as of the date of this docume any, is not below the threshold of regulatory concern for any regu	ent, there is no credib latory scheme world-	le reason to believe that the unavoidable impurity concer wide.	ntration of the	chemical sul				Total	100.00	-
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/plat		istics. You can access the UL iQTM family of databases to	o obtain a tes	t report at		0.29	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.	e made from polyving	yl chloride (PVC) plastic. "Window envelopes" used to ho	old the packin	g slip on the	outer box		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in the in their original packing materials is true and correct to the best on the completeness and accuracy of data in this form because it ha Supplier information is often protected from disclosure as trades Information is provided only as estimates of the average weight of include trace levels of dopants, metals, and non-metal materials of	f its knowledge and b s been compiled base ecrets and some info f these parts and the	elief, as of the date listed in this form. Microchip Technol d on the ranges provided in Material Safety Data Sheets p rmation may not have been provided by subcontract assa average weight of anticipated significant toxic metals cor	ogy Incorpor provided by r emblers and i	ated cannot g aw material so aw material s	uarantee uppliers. suppliers.			Total	100.00	
Microchip Technology Incorporated does not provide any warran warranties provided by Microchip Technology Incorporated and it Microchip's quotations, sales order acknowledgement, and invoid	s subsidiaries are con					1.79		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use or of this Certificate of Compliance for semiconductor products.							Tin	7440-31-5	100.00	
								Total	100.00	_
						143.20	0			100.000

Semiconductor Device Type	Co	nation Base / pper Alloy (C	•	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	307.43	(mg) Total	Mold Compound	% ot Total Weight	70.19
Silica, vitreous	60676-86-0	Mold Compound	59.662	261.317	596.615		Silica. vitreou	IS 60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.299	18.830	42.991		Epoxy Resi		6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4,299	18.830	42,991		Phenolic Resi		6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.720	7.532	17,197		Epoxy, Cresol Novola		2.45	
Carbon Black	1333-86-4	Mold Compound	0.211	0.922	2,106		Carbon Blac		0.30	
Copper	7440-50-8	Lead Frame	25,499	111.685	254,990			Total	100.00	
tother:									% of Total	
Iron	7439-89-6	Lead Frame	0.627	2.747	6,272	116.90	(mg) Total	Lead Frame	Weight	26.69
Silver	7440-22-4	Lead Frame	0.508	2.227	5,084		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.033	0.146	334		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.022	0.096	220		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.370	1.621	3.700		Zinc	7440-22-4	0.13	
Epoxy resin	Trade Secret	Die Attach	0.100	0.438	1.000		Phosphorous	7723-14-0	0.13	
					1		Phosphorous			
Metal oxide	Trade Secret	Die Attach	0.015	0.066	150			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.015	0.066	150	2.19	(mg) Total	Die Attach	% of Total Weight	0.5
Silicon	7440-21-3	Chip (Die)	1.850	8,103	18.500		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.090	0.394	900		Epoxy resin	Trade Secret	20	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.680	2.978	6,800		Metal oxide	Trade Secret	3	
100	1440 01 0	TOTALS:	100.000	438.000	1,000,000		Gamma-butvrolactone		3	
	0 4000	g Total Mass	100.000	400.000	1,000,000		Camina Batyrolacione	Total	100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).								Chip (Die)	Mar - Louis A	1.85
•	°,						Doped Silicon	7440-21-3	Weight 100	1.65
hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date of tance, if any, is not below the threshold of regulatory conce	cal substance is NO of this document, th ern for any regulato	T an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable ry scheme world-wide.	impurity cond	centration of t	he chemical	0.20		7440-21-3 Total		
hemical substance is absent from the list above, the chemic inology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory conce ling compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pl	cal substance is NC of this document, th ern for any regulato nability standard for lastics/	T an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable ry scheme world-wide. plastics. You can access the UL iQTM family of databas	impurity cond	centration of t	he chemical	0.39	Doped Silicon (mg) Total	7440-21-3	100 100.00	0.09
chemical substance is absent from the list above, the chemic hnology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory conce ding compounds used by Microchip meet the UL94 V0 flamm ://ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped	cal substance is NC of this document, th ern for any regulato nability standard for lastics/	T an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable ry scheme world-wide. plastics. You can access the UL iQTM family of databas	impurity cond	centration of t	he chemical			7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic hnology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory conce ding compounds used by Microchip meet the UL94 V0 flamm ://ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in to ices in their original packing materials is true and correct to rantee the completeness and accuracy of data in this form be pliers. Supplier information is often protected from disclosus pliers. Information is provided only as estimates of the avera mates do not include trace levels of dopants, metals, and no	cal substance is NC of this document, th ern for any regulato nability standard for lastics/ are made from poly this form concernin the best of its know ecause it has been re as trade secrets : age weight of these	T an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable ry scheme world-wide. plastics. You can access the UL iQTM family of databas vinyl chloride (PVC) plastic. "Window envelopes" used t g substances restricted by RoHS in Microchip Technolo redge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safet and some information may not have been provided by su parts and the average weight of anticipated significant to	impurity cond es to obtain a o hold the pac gy Incorporate chip Technolo y Data Sheets bcontract ass bcontract ass	centration of t test report at cking slip on t d's semicond gy Incorporat provided by r emblers and r	he chemical he outer box luctor ed cannot raw material raw material		(mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
chemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory conce ding compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped certain "reels" may be made from PVC plastic. which the information in the second protection of the date of the completeness and accuracy of data in this form bollers. Supplier information is often protected from disclosure oliers. Information is provided only as estimates of the avera	cal substance is NC of this document, the ern for any regulato nability standard for lastics/ are made from poly this form concernin the best of its know ecause it has been a re as trade secrets age weight of these on-metal materials co nty, express or imp its subsidiaries are	T an intentional ingredient in the semiconductor device erer is no credible reason to believe that the unavoidable ry scheme world-wide. plastics. You can access the UL iQTM family of databas vinyl chloride (PVC) plastic. "Window envelopes" used t g substances restricted by RoHS in Microchip Technoloy /ledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safet and some information may not have been provided by su parts and the average weight of anticipated significant to ontained within silicon devices (silicon IC) in the finished lied, with respect to the information provided in this decl	impurity cond es to obtain a o hold the pad gy Incorporate chip Technolo y Data Sheets becontract ass oxic metals co i parts. aration. The e	test report at test report at thing slip on t d's semicond gy Incorporat provided by r emblers and r mponents. Th xclusive, limit	he chemical he outer box luctor ed cannot raw material aw material tese		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.09
hemical substance is absent from the list above, the chemic inology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory conce ling compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in to cess in their original packing materials is true and correct to antee the completeness and accuracy of data in this form be pliers. Supplier information is often protected from disclosur liers. Information is provided only as estimates of the avera nates do not include trace levels of dopants, metals, and no ochip Technology Incorporated does not provide any warrai anties provided by Microchip Technology Incorporated and	cal substance is NC of this document, th ern for any regulato nability standard for lastics/ are made from poly this form concernin the best of its know ecause it has been re as trade secrets i age weight of these n-metal materials co nty, express or imp lits subsidiaries are oices. uges to Material Con sers' reliance on the	T an intentional ingredient in the semiconductor device lere is no credible reason to believe that the unavoidable ry scheme world-wide. plastics. You can access the UL iQTM family of databas vinyl chloride (PVC) plastic. "Window envelopes" used t g substances restricted by RoHS in Microchip Technolog ledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safet and some information may not have been provided by su parts and the average weight of anticipated significant to ontained within silicon devices (silicon IC) in the finished lied, with respect to the information provided in this decl e contained in Microchip's standard terms and conditions	impurity cond es to obtain a o hold the pac gy Incorporate chip Technolo y Data Sheets bcontract ass wic metals co I parts. aration. The e of sale. Thes	centration of t test report at cking slip on t d's semicond gy Incorporat provided by r emblers and r mponents. Th xclusive, limit e are provided irect, consequ	he chemical he outer box luctor ed cannot raw material raw material lese ted product d in uuential or		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100 100.00 % of Total Weight 100 100.00	0.09
hemical substance is absent from the list above, the chemic nology Incorporated's knowledge and belief as of the date of tance, if any, is not below the threshold of regulatory conce ing compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped certain "reels" may be made from PVC plastic. Dechip Technology Incorporated believes the information in f tes in their original packing materials is true and correct to antee the completeness and accuracy of data in this form bu liers. Supplier information is often protected from disclosur liers. Information is provided only as estimates of the avera nates do not include trace levels of dopants, metals, and no pachip Technology Incorporated does not provide any warran anties provided by Microchip Technology Incorporated and anties groutations, sales order acknowledgement, and invo pachip disclaims any duty to notify users of updates or chan; wise, suffered by users or third parties as a result of the users	cal substance is NC of this document, th ern for any regulato nability standard for lastics/ are made from poly this form concernin the best of its know ecause it has been re as trade secrets i age weight of these n-metal materials co nty, express or imp lits subsidiaries are oices. uges to Material Con sers' reliance on the	T an intentional ingredient in the semiconductor device lere is no credible reason to believe that the unavoidable ry scheme world-wide. plastics. You can access the UL iQTM family of databas vinyl chloride (PVC) plastic. "Window envelopes" used t g substances restricted by RoHS in Microchip Technolog ledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safet and some information may not have been provided by su parts and the average weight of anticipated significant to ontained within silicon devices (silicon IC) in the finished lied, with respect to the information provided in this decl e contained in Microchip's standard terms and conditions	impurity cond es to obtain a o hold the pac gy Incorporate chip Technolo y Data Sheets bcontract ass wic metals co I parts. aration. The e of sale. Thes	centration of t test report at cking slip on t d's semicond gy Incorporat provided by r emblers and r mponents. Th xclusive, limit e are provided irect, consequ	he chemical he outer box luctor ed cannot raw material raw material lese ted product d in uuential or		(mg) Total Doped Gold (mg) Total	Plating on external leads (pins) - Matte Tin / annealed at	100 100.00 % of Total Weight 100 100.00	0.09

Semiconductor Device Typ		nation Base A pper Alloy (C			JEDEC 97 Product Markin and/or Pkg. Labeling e3					
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part		60.00	(mg) Total	Mold Compound	% ot Total Weight	38.12
Silica, vitreous	60676-86-0	Mold Compound	32.402	51.001	ppm 324.020		Silica, vitreous	60676-86-0	85.00	1
Epoxy Resin (No bromine. No diantimony trioxide)	Trade Secret	Mold Compound	2.335	3.675	23.349		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.335	3.675	23,349		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.934	1.470	9.339		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.114	0.180	1,144		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	24.276	38.211	242,761		Carbon Black	Total		l
Iron	7439-89-6	Lead Frame	0.597	0.940	5,971	40.00	(% of Total Weight	25.41
Silver	7439-89-6	Lead Frame	0.597	0.940	4.841	40.00	(mg) Total	Lead Frame 7440-50-8		25.41
Zinc	7440-22-4 7440-66-6		0.032	0.762	318		Copper		95.54	
		Lead Frame					Iron	7439-89-6	2.35	
Phosphorous	7723-14-0 7440-22-4	Lead Frame	0.021	0.033	210		Silver	7440-22-4	1.91	
Silver Diester Resin	94-80-4	Die Attach Die Attach	2.618 0.524	4.120 0.824	26,175 5,235		Zinc	7440-66-6	0.13 0.08	
							Phosphorous	7723-14-0		
Functionalized Urethane Resin	72869-86-4	Die Attach	0.175	0.275	1,745			Total		
Epoxy Resin	9003-36-5	Die Attach	0.087	0.137	873	5.49	(mg) Total	Die Attach	% of Total Weight	3.49
Epoxy Resin	13561-08-5	Die Attach	0.087	0.137	873		Silver	7440-22-4	75	
Silicon	7440-21-3	Chip (Die)	3.180	5.005	31,800	_	Diester Resin	94-80-4	15	
Gold	7440-57-5	Wire Bond	1.210	1.905	12,100	Fur	ctionalized Urethane Resin	72869-86-4	5	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	28.590	45.001	285,900		Epoxy Resin	9003-36-5	3	
		TOTALS:	100.000	157.400	1,000,000		Epoxy Resin	13561-08-5	3 100.00	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			IS Recast Direc	ctive) and with	EU	5.01	Total (mg) Doped Silicon	Total Chip (Die) 7440-21-3	% of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via ini hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docum	ternal design controls, sup al substance is NOT an inte ent, there is no credible rea	/EC (RoHS Directive), EU Directive 2011/65/EU (RoH plier declarations, and /or analytical test data. ntional ingredient in the semiconductor device and, son to believe that the unavoidable impurity concer	, to the best of	Microchip Teo	:hnology	5.01		Chip (Die)	% of Total Weight	3.18
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via in nemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docum s not below the threshold of regulatory concern for any regu ng compounds used by Microchip meet the UL94 V0 flamma	ternal design controls, sup al substance is NOT an inte ant, there is no credible rea llatory scheme world-wide. ability standard for plastics	/EC (RoHS Directive), EU Directive 2011/65/EU (RoH plier declarations, and /or analytical test data. ntional ingredient in the semiconductor device and, son to believe that the unavoidable impurity concer	, to the best of ntration of the	Microchip Teo	:hnology	5.01		Chip (Die) 7440-21-3	% of Total Weight	3.18
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via ini- nemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docum s not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/plag- protective "tubes" in which the specific product is shipped an	ternal design controls, sup al substance is NOT an inte ent, there is no credible rea llatory scheme world-wide. ubility standard for plastics stics/	/EC (RoHS Directive), EU Directive 2011/65/EU (RoH plier declarations, and /or analytical test data. ntional ingredient in the semiconductor device and, son to believe that the unavoidable impurity concer . You can access the UL iQTM family of databases to	, to the best of ntration of the o obtain a test	Microchip Te chemical subs report at	chnology stance, if		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	3.18
semiconductor device and its homogenous materials comply tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plat orotective "tubes" in which the specific product is shipped an in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in the original packing materials is true and correct to the best of it bleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets ar ided only as estimates of the average weight of these parts a pants, metals, and non-metal materials contained within silic	ternal design controls, sup al substance is NOT an inte ant, there is no credible rea- ilatory scheme world-wide. ability standard for plastics stics/ re made from polyvinyl chl- uis form concerning substa is knowledge and belief, as en compiled based on the to some information may n dt some weight of a	/EC (RoHS Directive), EU Directive 2011/65/EU (RoH plier declarations, and /or analytical test data. ntional ingredient in the semiconductor device and, son to believe that the unavoidable impurity concer . You can access the UL iQTM family of databases t oride (PVC) plastic. "Window envelopes" used to he nces restricted by RoHS in Microchip Technology Ir of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets pro- ot have been provided by subcontract assemblers a ticipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's : yy Incorporated yided by raw m and raw materi	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara aterial suppliers. In al suppliers. In	chnology stance, if iter box and r devices in intee the ers. Supplier formation is	1.90	Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight 100	3.18
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via inthemical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any reguling compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plat protective "tubes" in which the specific product is shipped at in reels" may be made from PVC plastic.	ternal design controls, sup al substance is NOT an inte ent, there is no credible rea- ilatory scheme world-wide. ability standard for plastics stics/ re made from polyvinyl chl- is form concerning substa is knowledge and belief, as en compiled based on the id some information may n at he average weight of a con devices (silicon IC) in t ty, express or implied, with	IEC (RoHS Directive), EU Directive 2011/65/EU (RoH plier declarations, and /or analytical test data. ntional ingredient in the semiconductor device and, son to believe that the unavoidable impurity concer . You can access the UL iQTM family of databases to oride (PVC) plastic. "Window envelopes" used to he nces restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technology In of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets prov ot have been provided by subcontract assemblers a thicipated significant toxic metals components. The he finished parts.	, to the best of htration of the o obtain a test old the packing hcorporated's : y Incorporate vided by raw m and raw materi se estimates d	Microchip Ter chemical subs report at g slip on the or semiconducto d cannot guari aterial suppliers. In lo not include sive, limited p	chnology stance, if iter box and r devices in intee the ers. Supplier iformation is trace levels roduct	1.90	(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	3.18
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via im- nemical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped an in "reels" may be made from PVC plastic. whip Technology Incorporated believes the information in the original packing materials is true and correct to the best of if bleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets ar ded only as estimates of the average weight of these parts a pants, metals, and non-metal materials contained within silic schip Technology Incorporated does not provide any warrant intics provided by Microchip Technology Incorporated and its here the secret and t	ternal design controls, sup al substance is NOT an inte ent, there is no credible rea- ilatory scheme world-wide. ability standard for plastics stics/ re made from polyvinyl chl is form concerning substa is knowledge and belief, as en compiled based on the d some information may n nd the average weight of a icon devices (silicon IC) in t ty, express or implied, with is subsidiaries are containe es to Material Content Deci	/EC (RoHS Directive), EU Directive 2011/65/EU (RoH plier declarations, and /or analytical test data. ntional ingredient in the semiconductor device and, son to believe that the unavoidable impurity concer . You can access the UL iQTM family of databases to pride (PVC) plastic. "Window envelopes" used to how not be isted in this form. Microchip Technology In of the date listed in this form. Microchip Technology In of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets prov to have been provided by subcontract assemblers a nticipated significant toxic metals components. The he finished parts. respect to the information provided in this declarat ed in Microchip's standard terms and conditions of s arations and shall not be liable for any damages, dii	, to the best of ntration of the o obtain a test old the packing ncorporated's a y Incorporated's y Incorporated vided by raw me rand raw materi use estimates d con. The exclu- sale. These are rect or indirect	Microchip Ter chemical subs report at g slip on the or semiconducto d cannot guara aterial supplie al supplieral suppli supplieral supplieral suppli supplieral suppl	chnology stance, if iter box and r devices in untee the rrs. Supplier iformation is trace levels roduct licrochip's al or	1.90	(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 % of Total Weight 100 100.00	3.18

8:52 AM : 10/17/2014

Semiconductor Device Type: SO 18 (Lead) SOIC (Wide Outline - 300mil) (F2 / FJ) "Contained In"				ation Base A oper Alloy (C		Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Total	1		383.84	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	303.04	(mg) i otai	Mola Compouna	% of 1 otal weight	/9.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	326.262	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	23.510	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	23.510	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	9.404	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	1.152	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	48.251	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	1.187	2,468	50.51	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.962	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.063	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	2.706	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.505	1,050		Phosphorous	7723-14-0	0.08	l
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.271	563			Total		
Modified Amine	827-43-0	Die Attach	0.026	0.126	263	3.61	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	36.075	75,000		Silver (Ag)	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.200	0.962	2,000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.013	12,500	Dig	lycidylether of bisphenol-F	54208-63-8	8	
		TOTALS:	100.000	481.000	1,000,000		Modified Amine	827-43-0	4	
		g Total Mass						Total	100.00	
semiconductor device and its homogenous materials completive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			HS Recast Dir	ective) and wi	th EU	36.08	Total (mg)	l otal Chip (Die)	% of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 20	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro s, supplier declarations, and /or analytical test data.				36.08	Total (mg) Doped Silicon			
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma	r with EU Directive 24 ernal design control al substance is NOT : ent, there is no credi latory scheme world bility standard for pl	302/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device an ble reason to believe that the unavoidable impurity conc -wide.	d, to the best centration of th	of Microchip T e chemical su	echnology	36.08		Chip (Die) 7440-21-3	% of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu	r with EU Directive 20 ernal design control al substance is NOT a ent, there is no credi latory scheme world bility standard for pl stics/	302/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device an ble reason to believe that the unavoidable impurity conc -wide. astics. You can access the UL iQTM family of databases	d, to the best centration of th to obtain a tes	of Microchip T e chemical su st report at	echnology bstance, if		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plat protective "tubes" in which the specific product is shipped a	with EU Directive 20 ernal design control al substance is NOT a ent, there is no credi latory scheme work bility standard for pl stics/ er made from polyvir is form concerning s f its knowledge and s been compiled bas ecrets and some info f these parts and the	D02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device an ble reason to believe that the unavoidable impurity conc -wide. astics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to H ubstances restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchip Technology remation may not have been provided by subcontract as average weight of anticipated significant toxic metals c	Incorporated's amount of the best to obtain a test obtain a test obtain the packing incorporated is provided by incorporated semblers and	of Microchip T e chemical su st report at ng slip on the s semiconduc rated cannot (raw material s	echnology bstance, if outer box tor devices juarantee suppliers. uppliers.		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plat protective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic. bochip Technology Incorporated believes the information in the eir original packing materials is true and correct to the best of completeness and accuracy of data in this form because it has blier information is often protected from disclosure as trade as mation is provided only as estimates of the average weight of	with EU Directive 20 ernal design control al substance is NOT a ent, there is no credi latory scheme work bility standard for pl stics/ ere made from polyvir is form concerning s f its knowledge and s been compiled bas ecrets and some info f these parts and the ontained within silic y, express or implied s subsidiaries are co	D02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device an ble reason to believe that the unavoidable impurity conc -wide. astics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to h ubstances restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchip Technology belief, as of the date listed in this form. Microchip Technology romation may not have been provided by subcontract as average weight of anticipated significant toxic metals c on devices (silicon IC) in the finished parts.	id, to the best a entration of the to obtain a test hold the packin incorporated's lology incorpo its provided by semblers and omponents. The ation. The exc	of Microchip T e chemical su at report at ng slip on the s semiconduc rated cannot g raw material s nese estimates usive, limited	echnology bstance, if outer box tor devices juarantee suppliers. s do not product		Coped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via ini- hemical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this docum- is not below the threshold of regulatory concern for any regu- ling compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plan- protective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic. bochip Technology Incorporated believes the information in the eir original packing materials is true and correct to the best of completeness and accuracy of data in this form because it has plier information is often protected from disclosure as trade as mation is provided only as estimates of the average weight of de trace levels of dopants, metals, and non-metal materials of prochip Technology Incorporated does not provide any warran anties provided by Microchip Technology Incorporated and in anties provided by Microchip Technology Incorporated and in the specific technology Incorporated does not provide any warran anties provided by Microchip Technology Incorporated and in the specific technology Incorporated does not provide any warran anties provided by Microchip Technology Incorporated and in the specific technology Incorporated does not provide any warran anties provided by Microchip Technology Incorporated and in	with EU Directive 20 ernal design control al substance is NOT a ent, there is no credi latory scheme world bility standard for pl stics/ re made from polyvir is form concerning s f its knowledge and s been compiled bas ecrets and some info f these parts and the ontained within silic y, express or implied s subsidiaries are co es.	bo2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device an ole reason to believe that the unavoidable impurity conc I-wide. astics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to h substances restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchip Technology belief, as of the date listed in this form. Microchip Technology warage weight of anticipated significant toxic metals c on devices (silicon IC) in the finished parts. d, with respect to the information provided in this declar- intained in Microchip's standard terms and conditions o t Declarations and shall not be liable for any damages, d	d, to the best entration of th to obtain a tes nold the packin lncorporated' lology Incorpo is provided by semblers and omponents. TI ation. The exc f sale. These a direct or indire	of Microchip T e chemical su st report at ng slip on the s semiconduc raw material s raw material raw materia	echnology bstance, if outer box tor devices yuppliers. suppliers. s do not product	0.96	(mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin Jannealed at 150°C for	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2

Semiconductor Device Type: SO 20 (Lead) SOL (wide outline - work) (K3/.05) Vi Total View	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				
Last Substance CAS Number SUB-Component Viright Wirght	% ot Total Weigh	e3 ht 71.84			
Epoxy Ream (Not homine, No data/morey invokite) Trade Secret Mode Compound 4.400 23.849 44.002 Phenoic Ream 7469 5621 Mode Compound 1.700 5.608 17.000 Copport 7440 563 Lead Frame 2.475 1.5408 44.000 2.3849 44.000 Copport 7440 563 Lead Frame 2.475 1.5408 2.4756 1.5408 2.4756 1.5408 2.4756 1.5408 2.4756 1.5408 2.4756 1.5408 2.4756 3.4108 2.4756 3.4108 2.4756 3.4108 2.4176 3.4268 6.084 4.602 7.4104.64 Lead Frame 0.608 3.488 6.084 4.602 7.4104.64 Lead Frame 0.025 1.124 Lead Frame 2.262 7.440.646 1.844 7.440.646 1.844 7.440.646 1.844 7.440.646 1.844 4.600 7.440.646 1.844 4.600 7.440.646 1.844 4.600 7.440.646 1.845 4.600 7.440.646 1.845 2.262		71.04			
Phenolic Keam (No Br / CL StO3: No diamitmany tracks) Track Secret Mold Compound 1.760 5.840 7.701 0 0.000 1.000 0.218 1.100 2.155 Centor Nauk 1.330.64.1 Note Centor Nauk 1.330.64.1 Note Centor Nauk 1.330.64.1 Note Centor Nauk 1.330.64.1 <t< td=""><td>85.00</td><td>_</td></t<>	85.00	_			
Epox, Cread Novalac 2880-82-2 Mold Compound 1.700 5.440 17.61 Epox, Cread Novalac 2880-82-2 Cotpper 7440-05-8 Laad Frame 0.0216 1.168 2.155 7440-05-8 Laad Frame 0.0216 2.168 2.155 7440-05-8 Laad Frame 0.021 0.116 2.473-37 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 1.32.37 1.33.884-1 2.33.01 1.33.884-1 2.33.01 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 2.473-37 1.34.002 2.53.01 1.30.002 2.52.002 1.36.1 2.51.002 1.36.002 2.473-37 1.34.002 2.52.002 1.36.002 2.473-37 1.34.002 2.52.002 1.36.002 2.52.002 1.36.002 2.52.002 1.36.002 2.52.002 1.30.002 <t< td=""><td>6.13 6.13</td><td></td></t<>	6.13 6.13				
Copper 7440508 Lead Frame 2475 Copper Copper Copper 743586 Lead Frame 24755 Copper Copper Copper 743586 Lead Frame 0.008 3.060 24757 Trant Trant Trant Copper 743586 Lead Frame 0.001 0.116 214 Copper 743058 Lead Frame 0.0021 0.116 214 Copper 743058 Copper 743058 Copper 743058 Copper 743058 Copper 743058 Copper 743058 Copper 7440224 Det Attach 0.028 0.360 680 7440274 Det Attach 0.028 0.360 680 7440274 Det Attach 0.058 1.000 744024 Prophytocia 7723140 Det Attach 0.058 0.050 0.055 0.050 0.055 0.050 0.055 0.050 0.055 0.050 0.055 0.050 0.055 0.050 0.055 0.050 0.055 0.050 0.055 0.050 0.050	2.45	-			
Copper 7440-50-8 Lead Frame 247-35 134.062 247.347 134.062 247.347 Ison 7439-58-6 Lead Frame 0.403 2.573 4.932 Copper 7440-50-8 Silver 7440-52-4 Lead Frame 0.403 2.573 4.932 Copper 7440-50-8 Properois 7440-52-4 Lead Frame 0.403 2.573 4.932 Copper 7440-50-8 Silver 7440-52-4 Die Attach 0.058 0.583 650 760 7460-56-6 Epoxy rein Trade Secret Die Attach 0.010 0.055 102 1.4 (mg) Total De Attach Gramma-bulyvalectore 66-40-0 Die Attach 0.010 0.055 102 1.4 (mg) Total De Attach Gramma-bulyvalectore 86-40-0 Die Attach 0.010 0.555 102 1.4 (mg) Total De Attach Gramma-bulyvalectore 86-40-0 Die Attach 0.610 0.555 102 1.4	0.30	-			
Iron 7439-89-0 Lead Frame 0.608 2.98 6.084 140.32 Imp] Test Lead Frame Silver 7440-66-6 Lead Frame 0.032 0.115 334 1.932 Prophytrous 7723-14-0 Lead Frame 0.032 0.115 334 Express 7723-05-0 Lead Frame 0.032 0.116 214 Express 7723-05-0 Lead Frame 0.032 0.117 334 Express 7723-05-0 Lead Frame 0.032 0.117 334 Express 7740-05-6 Lead Frame 0.032 0.117 334 Express Trane Secret Die Atlach 0.010 0.055 102 Trane 7440-57-5 Wire Bord 0.100 0.542 1.000 Trane 0.400-1 1.000 5.666 0.000 0.662 Silicon 7440-57-5 Wire Bord 0.100 0.542 1.000 Trane 0.400-1 0.100 0.542 1.000 0.662 Second 0.540 g Total Mass Total Secret 0.000 5.666 0.000 Second 0.540 g Total Mass Total Secret 0.000 5.666 0.000 <		0			
Silver 7440-22-4 Lead Frame 0.483 2.673 4.632 772-744-00-00 Prosphorous 7772-14-0 Lead Frame 0.0321 0.116 214 20 20 773-74-00-00 20 20 175 334 20 772-74-00-00 20 176 234 20 176 21-364 25-16 20 20 176 21-364 25-16 20 20 27-74-00-00 20 20 176 21-364 25-16 20 20 74-00-00 20	% of Total Weigh				
Zmc 7440666 Lead Frame 0.032 0.175 324 Biver 7740224 Die Attach 0.252 1.364 2,516 Epoyresin Trade Secret Die Attach 0.252 1.364 2,516 Matal oxide Trade Secret Die Attach 0.010 0.055 102 7440666 Silver Trade Secret Die Attach 0.010 0.055 102 1.44 (mg) Total Die Attach Gold 7440525 Wirk Bond 0.010 0.052 1.500 Die Attach Tim 74405315 Wirk Bond 1.000 0.542 1.000 Die Attach 0.5420 gg Total Mass Trade Secret Die Attach 0.000 542.000 1.000.000 542.000 1.000.000 10 semiclosubstance is absent from the list above, the chenical substance is NOT an intentional ingredient in the semiclonductor device and, the specific product is shipped are made from polyvinyl choride (PVC) plastic. "Window envelopes" used to hid in ternal design controls, supplier dealarations, and /or analytical test data. 0.54 (mg) Chip Die) Die Oil 0.54 (mg) Chip Die) Die Oil Die Oil 0.54 <td< td=""><td>95.54</td><td>nt 25.89</td></td<>	95.54	nt 25.89			
Phosphorous 772:14:0 Lead Frame 0.021 0.116 214 Biver 7440:22:4 Die Attach 0.025 1.584 2.516 Epoxy resin Trade Secret Die Attach 0.068 0.365 680 Otemme Attribution 7440:21:3 Die Attach 0.010 0.055 102 Gemme Attribution 7440:21:3 Otem Attribution 0.116 0.053 11.84 (mg Total 7440:21:3 Gemme Attribution 7440:21:3 Otem Attribution 0.116 0.053 11.90 1.84 (mg Total 7440:21:3 Total Secret 0.050 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.869 0.800 1.860 0.800 1.860 0.800 1.800 0	2.35	-			
Silver 7440.224 Die Attach 0.252 1.364 2.516 Exoxy resin Trade Secret Die Attach 0.068 0.389 680 Metal oxide Trade Secret Die Attach 0.010 0.055 102 1364 (mg) Total Die Attach Gold 7440.27.5 Die Attach 0.010 0.055 102 1364 (mg) Total Die Attach Gold 7440.27.6 Die Attach 0.010 0.055 102 1364 (mg) Total Die Attach Tr 7440.27.6 Die Attach 0.010 0.256 0.000 3.056 0.000 3.056 0.000 0.	2.35	-1			
Epoxy resin Trade Secret Die Attach 0.068 0.389 680 Gamma-butyrolactone 96-48.0 Die Attach 0.010 0.055 102 1.44 (mg) Total Die Attach Gild 7440-21-3 Chip (Die) 1.150 6.233 11,500 6.233 11,500 Gold 7440-21-3 Chip (Die) 0.1680 3.686 6.800 Netal oxic Skert 7404 22-4 Gold 7440-31-5 Putrg on estimal fasta (rgs) - Math Tin / annebad at 100° C tor tricor 0.6868 3.680 1,6000 Netal oxic Frade Secret 0.5420 g Total Mass 0.5420 g Total Mass Total Secret 0.6868 3.680 1,6000 6.23 Total (mg) Chip (Die) weretro 2007352CC (End-of-Life Vehicles (ELV) Directive). Directive 20021652CC (RoHS Directive), EU Directive 2011657EU (RoHS Recast Directive) and with EU 6.23 Total (mg) Chip (Die) y is not before thershold of regulatory concern for any regulatory scheme work wide. Notal oxet in any regulatory scheme work wide. 0.54 (mg) Total Wire Bond 0.54 (mg) Total Wi	0.13	-1			
Metal oxide Trade Secret Die Attach 0.010 0.055 102 1.4 (mg) Trad Die Attach Glamma-butyrolatone 96-48-0 Chip (Die) 1.150 6.233 11.500 1.44 (mg) Trad Die Attach Gold 7440-27-3 Chip (Die) 1.150 6.233 11.500 5.420 Epoxytemis Trade Secret Metal oxide Trin 7440-37-5 Wire Bond 0.054 1.000 542.000 1.000.000 542.000 1.0	0.13	-1			
Gamma-butyrollactone 98-80 Die Attach 0.010 0.085 102 1.44 mgl Total Die Attach Gold 7440-21-3 Chip (Die) 1.150 6.233 11.500 5.88e 7.440-21-3 Tin 7440-21-57.6 Wire Bond 0.0680 3.686 6.800 Matter Transed secret 0.5420 g Total Mass TOTALS: 100.000 542.000 1.000,000 542.600 1.000,000 542.600 Total Metal Science Metal Science Metal Science Total Metal Science Total (mg) Chip (Die) Chip (Die) Total Metal Science Total Metal Science Total (mg) Chip (Die) Scie Total (mg) Chip (Di		0			
Silicon 7440-21-3 Chip (Dit) 1.150 6.23 11,500 Silicon 7440-22-4 Gold 7440-57-5 Wire Bond 0.00 0.542 10,000 542.000 1,000.00 542.000 1,000.00 0.542 Mate Tri / ansate at the solution of the solutis solution of the solution of	% of Total Weigh				
Cold 74403r5 Wire Bond 1.00 0.542 1.000 Tin 74403r5 Playing on external leads (prep) Mates Tri varnaled at 150°C or 1 har 0.6800 6.800 TOTALS: 100.000 542.000 1,000,000 Semiconductor device and its homogenous materials comply with EU Directive 200293/EC (End-Ot-Life Valcides (ELV) Directive). Eposymetry Trade Secret: mpliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 6.23 Total (mg) Chip (Die) orporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if (in an equation of the specific product is shipped are made from polyvinyl choride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in registry may be made from PVC plastic. 0.54 (mg) Total Wire Bond Torporated's knowledge and belief as of the date of its knowledge and belief, as of the date itsed in this form concerning substances restricted by RoHS in Microchip Technology incorporated at his tor become the secret on complied based on the range provided in Material Saget 2011/65/LD (Convigot 2011/65/LD (Con	74	0.34			
Tim 7440-31-5 Puting on external teads (pre) - Matte Tn / annealed at 150°C for 1 hour 0.880 3.886 6.800 Metal code Trade Secret 0.5420 g Total Mass ToTALS: 100.000 542.000 1,000,000 542.000 1,000,000 542.000 1,000,000 542.000 1,000,000 TotALS: 0.680 3.686 6.800 Total Mass Total Mass s semiconductor device and its homogenous materials comply with EU Directive 2002/29/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 6.23 Total (mg) Chip (Die) mplance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Dope Silcon 7440-21-3 is not below the threshold of regulatory concern of ran y regulatory scheme worldwide. 0.54 (mg) Total Wire Bond p/ul.com/global/eng/page/offerings/industries/chemical/splastics/ o.54 (mg) Total Wire Bond p/ul.com/global/eng/page/offerings/industries/chemical/splastics/ o.54 (mg) Total Dope Gold 7440-57-5 crochip Technology Incorporated believes the information in this form concerning substances restricted by RMS in Microchip Technology Incorporated or the bease of in this form Bonde on the arrange provided in Material Safery Data Stary Data Stary Data Stary Data	20	_			
Option Totals: Total: Tota: Tota: </td <td>3</td> <td>_</td>	3	_			
O.5420 g Total Mass semiconductor device and its homogenus materials comply with EU Directive 200295/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 6.23 Total (mg) Chip (Die) Dope Silicon 7440-21-3 Total (mg) Chip (Die) Dope Silicon 7440-21-3 Total (mg) Chip (Die) Dope Silicon 7440-21-3 Total (mg) Chip (Die) Total mpliance with the above EU Directives has been verified via internal design controls, supplier declarations, and <i>lor</i> analytical test data. Chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology roprotated* knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at an 'irrels'' may be made from PVC plastic. Tor protective "Universe" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and the roregue segling on correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated suppliers. Inspirers. Tor Tor protective "Universe" and which are supplier substances (slilicon cl) in the finished parts. Tor traites provided by subcontract assemblers and raw material suppliers. Information is or protective "Universe" and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels for adjual packing materials is true and correct to the best of its knowledge and belief, as of the date listed b	3	-			
semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU potiance with the above EU Directives has been verified via internal design controls, supplier declarations, and <i>l</i> or analytical test data. themical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology portated's from weldeg and helief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not below the threshold of regulatory concern for any regulatory scheme world-wide. ding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <i>J</i> /uL.com/global/eng/pages/offerings/industries/chemicals/plastics/ protective "in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and ain "reels" may be made from PVC plastic. Tori rolginal packing materials is true and correct to the best of this knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's nonic guarantee the pleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by itare levels protective "utbes" in which the specific protocyte and some information may not have been provided by subcontract assemblers and norm and material subpliers. Suppliers. Tori protective of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels ported by Microchip Technology Incorporated dates not provide and some information may not have been provided by Microchip Technology Incorporated dates not		0			
Idialing compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at 0.54 (mg) Total Wire Bond p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ 0.54 (mg) Total Dope Gold 7440-57-5 crochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in sir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the mpleteness and accuracy of data in this form because it has been compiled based on the ranges provided by subcortact assemblers and raw material suppliers. Suppliers orditor protected from disclosure as trade secrets and some information may not have been provided by subcortact assemblers and raw material suppliers. Suppliers or the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. 3.69 (mg) Total Plating on external leads (pins) · Matte Ti annealed at 150°C for four envices as a result of the users' reliance on the information in Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or indirect, consequential or envise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5	100 al 100.0	0			
Train "reels" may be made from PVC plastic. Dope Gold 7440-57-5 Dope Gold 7440-57-5 To provide plastic. To provide plastic. Crochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated cannot guarantee the moleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Information is solvided only as estimates of the average weight of these parts and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is solvided only as estimates on the average weight of anticipated significant toxic metals components. These estimates do not include trace levels dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product is as order acknowledgement, and invoices. crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product is as order acknowledgement, and invoices. crochip tisclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or provide as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or	% of Total Weigh	ht 0.1			
crochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in sir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the mpleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier ormation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is solided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's 3.69 (mg) Total leads (pins) - Matte Ti annealed at 150°C for hour reroking disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or run is suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5	100				
Iteration is the exclusive, influence for the exclusive, influence for duck and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's 3.69 (mg) Total leads (pins) - Matte Til annealed at 150°C for hour conchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or herwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5	al 100.0	0			
herwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5		ht 0.68			
	100.00				
To	al 100.0	0			

				nation Base A pper Alloy (C			•	ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: OG 24 (Lea	d) SOIC (Wide Outline - 300mil) (K3 / KS)								e3
Desis Substance	CAC Number	"Contained In" Sub-Component	% Total Weight			462.27	(mg) Total	Mold Compound	% ot Total Weight	69.83
Basic Substance Silica. vitreous	60676-86-0	Mold Compound	59.356	mg/part 392,933	ppm				05.00	m
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound Mold Compound	4.277	28.314	593,555 42,771		Silica, vitreous Epoxy Resin	60676-86-0 Trade Secret	85.00 6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound Mold Compound	4.277	28.314	42,771		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.711	11.326	17.108		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.209	1.387	2,095		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	25.757	170.511	257,569		Carbon Diack	Total	100.00	1
Iron	7439-89-6	Lead Frame	0.634	4.194	6,336	178.48	(mg) Total	Lead Frame	% of Total Weight	
Silver	7440-22-4	Lead Frame	0.514	3.400	5,136	170.40	Copper	7440-50-8	95.54	20.00
Zinc	7440-66-6	Lead Frame	0.034	0.223	337		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.022	0.147	222		Silver	7439-89-6	2.35	
Silver	7440-22-4	Die Attach	0.326	2.155	3,256		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.088	0.583	880		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.013	0.087	132		Filospholous	Total	100.00	1
Gamma-butyrolactone	96-48-0	Die Attach	0.013	0.087	132	2.91	(m a) T-t-1	Die Attach	% of Total Weight	
	7440-21-3					2.91	(mg) Total			0.44
Silicon		Chip (Die)	2.010	13.306	20,100 900		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond		0.596			Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.670	4.435 662.000	6,700 1.000.000		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	002.000	1,000,000		Gamma-butyrolactone	96-48-0 Total	3 100.00	
	0.6620	g Total Mass						i otai	100.00	
s semiconductor device and its homogenous materials complective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	/ with EU Directive 20	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direct	ctive) and with	EU	13.31	Total (mg)	Chip (Die)	% of Total Weight	2.01
mpliance with the above EU Directives has been verified via in	ternal design control	s, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
chemical substance is absent from the list above, the chemical	al substance is NOT a						·	T	100.00	1
, is not below the threshold of regulatory concern for any regu	ent, there is no credit ulatory scheme world	ble reason to believe that the unavoidable impurity concer I-wide.	ntration of the	chemical subs			`	Total	100.00	<u>1</u>
, is not below the threshold of regulatory concern for any regulatory concern for any regulation of the UL94 V0 flamma	ent, there is no credit ulatory scheme world ability standard for pl	ble reason to believe that the unavoidable impurity concer I-wide.	ntration of the	chemical subs		0.60	(mg) Total	Total Wire Bond	100.00 % of Total Weight	
orporated's knowledge and belief as of the date of this documn r, is not below the threshold of regulatory concern for any regu- lding compounds used by Microchip meet the UL94 V0 flamma sJ/ul.com/global/eng/pages/offerings/industries/chemicals/plat protective "tubes" in which the specific product is shipped an tain "reels" may be made from PVC plastic.	ent, there is no credit ulatory scheme world ability standard for pl stics/	ble reason to believe that the unavoidable impurity concer -wide. lastics. You can access the UL iQTM family of databases t	ntration of the o obtain a test	chemical subs	stance, if	0.60	(mg) Total Doped Gold	Wire Bond 7440-57-5	% of Total Weight	0.09
r, is not below the threshold of regulatory concern for any regu Iding compounds used by Microchip meet the UL94 V0 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plas p protective "tubes" in which the specific product is shipped and	ent, there is no credit latory scheme world ability standard for pl stics/ re made from polyvin his form concerning s ts knowledge and bel en compiled based o hd some information nd the average weigt	ble reason to believe that the unavoidable impurity concer- wide. lastics. You can access the UL iQTM family of databases to hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	ntration of the o obtain a test old the packing ncorporated's i y Incorporated vided by raw m and raw materi	chemical subs report at g slip on the ou semiconducto d cannot guara aterial suppliers. In al suppliers. In	stance, if uter box and r devices in antee the ers. Supplier nformation is	0.60		Wire Bond	% of Total Weight	0.09
r, is not below the threshold of regulatory concern for any regu- lding compounds used by Microchip meet the UL94 V0 flamma o://ul.com/global/eng/pages/offerings/industries/chemicals/plate or potective "tubes" in which the specific product is shipped at tain "reels" may be made from PVC plastic. erochip Technology Incorporated believes the information in the ir original packing materials is true and correct to the best of it inpleteness and accuracy of data in this form because it has be protection is offen protected from disclosure as trade secrets ar vided only as estimates of the average weight of these parts a	ent, there is no credil latory scheme world ability standard for pl stics/ re made from polyvin his form concerning s ts knowledge and bel en compiled based o hd some information nd the average weigh con devices (silicon l ty, express or implied	ble reason to believe that the unavoidable impurity concer- wide. lastics. You can access the UL IQTM family of databases to hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The C) in the finished parts.	ntration of the o obtain a test old the packing ncorporated's i y Incorporate vided by raw m and raw materi se estimates c ion. The exclu	chemical subs report at g slip on the ou semiconducto d cannot guara aterial supplie al suppliers. In lo not include sive, limited p	stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct	0.60	Doped Gold	Wire Bond 7440-57-5	% of Total Weight	. 0.09
, is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plat protective "tubes" in which the specific product is shipped at ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in th r original packing materials is true and correct to the best of it ippleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets ar vided only as estimates of the average weight of these parts a lopants, metals, and non-metal materials contained within silic rochip Technology Incorporated does not provide any warrant ranties provided by Microchip Technology Incorporated and it	ent, there is no credit ulatory scheme world ability standard for pl stics/ re made from polyvin his form concerning s ts knowledge and bel en compiled based o d some information nd the average weigt con devices (silicon I ty, express or implier ts subsidiaries are co es to Material Conten	ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL iQTM family of databases to hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of a ht Declarations and shall not be liable for any damages, dii	ntration of the o obtain a test old the packing ncorporated's y Incorporated vided by raw m and raw materi se estimates o ion. The exclu sale. These are rect or indirect	chemical subs report at g slip on the ou semiconducto d cannot guars aterial suppliers. I al suppliers lo not include sive, limited p e provided in N c, consequentia	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct Microchip's al or		Doped Gold	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour 7440-31-5	% of Total Weight 100 100.00 % of Total Weight 100.00	: 0.09 : 0.67
is not below the threshold of regulatory concern for any regu- ling compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plar portective "tubes" in which the specific product is shipped an in "reels" may be made from PVC plastic. bochip Technology Incorporated believes the information in the original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets ar ided only as estimates of the average weight of these parts a upants, metals, and non-metal materials contained within silic occhip Technology Incorporated does not provide any warrant anties provided by Microchip Technology Incorporated and it ations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or chang- wise, suffered by users or third parties as a result of the use	ent, there is no credit ulatory scheme world ability standard for pl stics/ re made from polyvin his form concerning s ts knowledge and bel en compiled based o d some information nd the average weigt con devices (silicon I ty, express or implient ts subsidiaries are co es to Material Conten	ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL iQTM family of databases to hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of a ht Declarations and shall not be liable for any damages, dii	ntration of the o obtain a test old the packing ncorporated's y Incorporated vided by raw m and raw materi se estimates o ion. The exclu sale. These are rect or indirect	chemical subs report at g slip on the ou semiconducto d cannot guars aterial suppliers. I al suppliers lo not include sive, limited p e provided in N c, consequentia	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct Microchip's al or		Doped Gold	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	% of Total Weight 100 100.00 % of Total Weight	: 0.09

Semiconductor Device	e Type: SO & OI 28	SOIC (300mil) (N3 / NN)		nation Base / pper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Iotal			614.78	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm			•		
Silica, vitreous	60676-86-0	Mold Compound	67.830	522.562	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.888	37.655	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	4.888	37.655	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	15.062	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	1.844	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	77.282	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	1.901	2,468	80.89	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	1.541	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.101	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.067	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.600	4.622	6,000		Zinc	7440-66-6	0.13	
Acrylate Urethane Oligomer	General	Die Attach	0.150	1.156	1,500		Phosphorous	7723-14-0	0.08	
Silicon	7440-21-3	Chip (Die)	7.500	57.780	75,000			Total	100.00	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	1.514	1,965	5.78	(mg) Total	Die Attach	% of Total Weight	0.75
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.027	35		Silver (Ag)	7440-22-4	80	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	9.630	12,500		Acrylate Urethane Oligome	General	20	
		TOTALS:	100.000	770.400	1,000,000			Total	100.00	-
	0.7704	g Total Mass				57.78	Total (mg)	Chip (Die)	% of Total Weight	7.5
				tive) and with	120		Doped Silicon	7440-21-3	100	
pliance with the above EU Directives has been verified themical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d	hemical substance is NOT a locument, there is no credil	an intentional ingredient in the semiconductor device and, ole reason to believe that the unavoidable impurity concer		Microchip Tee	chnology	1.54	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond palladium coated copper (CuPd)	100 100.00 % of Total Weight	0.2
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ing compounds used by Microchip meet the UL94 V0 f	hemical substance is NOT a locument, there is no credil ny regulatory scheme world lammability standard for pl	an intentional ingredient in the semiconductor device and, ole reason to believe that the unavoidable impurity concer	ntration of the	Microchip Tec chemical subs	chnology	1.54		Total Wire Bond palladium coated	100.00	0.2
rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica	nemical substance is NOT a locument, there is no credil ny regulatory scheme world lammability standard for pl als/plastics/	an intentional ingredient in the semiconductor device and, ole reason to believe that the unavoidable impurity concer l-wide.	ntration of the	Microchip Tec chemical subs report at	chnology stance, if	1.54	(mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.2
pliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatic original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec	nemical substance is NOT a locument, there is no credit my regulatory scheme world lammability standard for pl als/plastics/ oped are made from polyvir un in this form concerning s st of its knowledge and be has been compiled based of rets and some information arts and the average weigi	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL IQTM family of databases to hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	ntration of the pootain a test old the packing ncorporated's a ly Incorporated rided by raw m and raw materi	Microchip Tec chemical subs report at slip on the or semiconducto d cannot guara aterial suppliers. Il	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is	1.54	(mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8	100.00 % of Total Weight 98	0.2
pliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ing compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. oochip Technology Incorporated believes the informatid original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec opants, metals, and non-metal materials contained with oochip Technology Incorporated does not provide any v	nemical substance is NOT a locument, there is no credit my regulatory scheme world lammability standard for pl als/plastics/ opped are made from polyvir on in this form concerning s sto of its knowledge and be has been compiled based of rets and some information parts and the average weigh in silicon devices (silicon I varranty, express or implied	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL IQTM family of databases to hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	ntration of the o obtain a test old the packing ncorporated's : y Incorporated vided by raw m and raw materi se estimates d ion. The exclu:	Microchip Tec chemical subs report at slip on the or semiconducto d cannot guara aterial suppliers. In o not include sive, limited p	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels product	9.63	(mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.2
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. oochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec ided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any v anties provided by Microchip Technology Incorporate ations, sales order acknowledgement, and invoices.	nemical substance is NOT a locument, there is no credit ny regulatory scheme world lammability standard for pl als/plastics/ oped are made from polyvir on in this form concerning s sto fits knowledge and be has been compiled based of rets and some information arts and the average weigh in silicon devices (silicon I varranty, express or implied and its subsidiaries are co- changes to Material Conter he users' reliance on the in	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL IQTM family of databases to ryl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Im lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The C) in the finished parts.	ntration of the o obtain a test old the packing ncorporated's s y Incorporated's s y Incorporated ided by raw mand raw materi se estimates d ion. The exclus sale. These are rect or indirect	Microchip Tec chemical subs report at semiconducto I cannot guara aterial supplia al suppliers. In io not include sive, limited p provided in N , consequenti	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels voduct wicrochip's al or		(mg) Total Copper Palladium	Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100.00 % of Total Weight 98 2 100.00 % of Total Weight 100.00	
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ing compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica orotective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. bochip Technology Incorporated believes the informatic original packing materials is true and correct to the be oleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec died only as estimates of the average weight of these p ipants, metals, and non-metal materials contained with bochip Technology Incorporated does not provide any v anties provided by Microchip Technology Incorporate ations, sales order acknowledgement, and invoices.	nemical substance is NOT a locument, there is no credit ny regulatory scheme world lammability standard for pl als/plastics/ oped are made from polyvir on in this form concerning s sto fits knowledge and be has been compiled based of rets and some information arts and the average weigh in silicon devices (silicon I varranty, express or implied and its subsidiaries are co- changes to Material Conter he users' reliance on the in	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to by chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Im lief, as of the date listed in this form. Microchip Technology Im on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarat intained in Microchip's standard terms and conditions of s at Declarations and shall not be liable for any damages, dir	ntration of the o obtain a test old the packing ncorporated's s y Incorporated's s y Incorporated ided by raw mand raw materi se estimates d ion. The exclus sale. These are rect or indirect	Microchip Tec chemical subs report at semiconducto I cannot guara aterial supplia al suppliers. In io not include sive, limited p provided in N , consequenti	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels voduct wicrochip's al or		(mg) Total Copper Palladium (mg) Total Tin	Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 98 2 100.00 % of Total Weight 100.00	

AICROCHIP				nation Base / opper Alloy (C	-			geneous Materials: J. pc boards, displays)	JEDEC 97 Product Markir and/or Pkg. Labeling e3
Semiconductor Device	Type: SM 08 (Lead) SOIJ (Small Outline-208 mil) (C3) "Contained in"	% Iotal	1						60
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	99.27	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	86.277	693.542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	7.614	61.207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	5.073	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.308	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	12,479	100.314		Carbon black	Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.307	2,468	13.06	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver		Lead Frame	0.247	0.249	2,408	13.06				10.5
	7440-22-4						Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.016	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.011	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.700	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.131	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.070	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.033	263	0.93	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7,500	9.330	75,000		Silver (Ag)	7440-22-4	75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.244	1.965		Modified Epoxy Resin	13561-08-5	14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.004	35	r	iglycidylether of bisphenol-F	54208-63-8	8	
Tin	7440-05-3	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.555	12,500	L	Modified Amine		0 4	
111	7440-31-5				1.000.000		Modified Amine			
		TOTALS:	100.000	124.400	1,000,000			Total	100.00	
	0.1244	g Total Mass				9.33	Total (mg)	Chip (Die)	% of Total Weight	7.5
								0111p (B10)		
semiconductor device and its homogenous materials of	omply with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	6 Recast Dire	ctive) and with	i EU		1		100	
semiconductor device and its homogenous materials c ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Dire	ctive) and with	i EU		Doped Silicon	7440-21-3	100	
			S Recast Dire	ctive) and with	1 EU		1		100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch	via internal design contro emical substance is NOT ocument, there is no credi	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	to the best of	Microchip Te	chnology	0.25	1	7440-21-3		0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for an	via internal design contro emical substance is NOT ccument, there is no credi y regulatory scheme work ammability standard for p	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen	to the best of tration of the	Microchip Tec chemical subs	chnology	0.25	Doped Silicon	7440-21-3 Total Wire Bond - Copper, palladium	100.00	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	via internal design contro emical substance is NOT bocument, there is no credi y regulatory scheme work ammability standard for p Is/plastics/	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide.	to the best of tration of the obtain a test	Microchip Te chemical subs	chnology stance, if	0.25	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd)	100.00 % of Total Weight	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic.	via internal design contro emical substance is NOT ocument, there is no credi y regulatory scheme work ammability standard for p Is/plastics/ ped are made from polyvi	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to	to the best of tration of the obtain a test Id the packing	Microchip Ter chemical subs report at g slip on the or	chnology stance, if uter box and	0.25	Ooped Silicon (mg) Total Copper	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	100.00 % of Total Weight 98	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the ch prorated's knowledge and belief as of the date of this di is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information original packing materials is true and correct to the be- pleteness and accuracy of data in this form because it I mation is often protected from disclosure as trade secr	via internal design contro emical substance is NOT ocument, there is no credi y regulatory scheme work ammability standard for p ls/plastics/ ped are made from polyvi n in this form concerning st of its knowledge and be tas been compiled based ets and some information arts and the average weig	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an to of anticipated significant toxic metals components. These	to the best of tration of the obtain a test d the packing corporated's y Incorporate ided by raw m of raw materi	Microchip Ter chemical sub: report at g slip on the or semiconducto d cannot guara naterial supplie	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is	0.25	Ooped Silicon (mg) Total Copper	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this di is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. cochip Technology Incorporated believes the information original packing materials is true and correct to the be- pleteness and accuracy of data in this form because it f mation is often protected from disclosure as trade secri ided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any w	via internal design contro emical substance is NOT ocument, there is no credi y regulatory scheme work ammability standard for p Is/plastics/ ped are made from polyvi n in this form concerning st of its knowledge and be as been compiled based ets and some information arts and the average weig in silicon devices (silicon arranty, express or implie	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an to of anticipated significant toxic metals components. These	to the best of tration of the obtain a test d the packing corporated's y Incorporated ded by raw m the estimates of on. The exclu	Microchip Ter chemical subs report at g slip on the or semiconducto d cannot guara aterial supplie ial supplier do not include usive, limited p	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct	0.25	Copper Palladium	7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch prorated's knowledge and belief as of the date of this di is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information original packing materials is true and correct to the be- pleteness and accuracy of data in this form because it the mation is often protected from disclosure as trade secr- ided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any w anties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or of	via internal design contro emical substance is NOT ocument, there is no credi y regulatory scheme work ammability standard for p Is/plastics/ ped are made from polyvi en in this form concerning st of its knowledge and be as been compiled based ets and some information arts and the average weig in silicon devices (silicon arranty, express or implie and its subsidiaries are co schanges to Material Conte e users' reliance on the ir	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. Thes C) in the finished parts.	to the best of tration of the obtain a test d the packing corporated's y Incorporated ded by raw m and raw materise estimates c on. The exclu ale. These are ect or indirect	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara aterial suppliers. In do not include sisive, limited p s provided in N	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct licrochip's al or		Copper Palladium	7440-21-3 Total Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 98 2 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch prorated's knowledge and belief as of the date of this di is not below the threshold of regulatory concern for an ing compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. oochip Technology Incorporated believes the informatio original packing materials is true and correct to the be- pleteness and accuracy of data in this form because it I mation is often protected from disclosure as trade secr ided only as estimates of the average weight of these p oppants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any w anties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices.	via internal design contro emical substance is NOT ocument, there is no credi y regulatory scheme work ammability standard for p Is/plastics/ ped are made from polyvi en in this form concerning st of its knowledge and be as been compiled based ets and some information arts and the average weig in silicon devices (silicon arranty, express or implie and its subsidiaries are co schanges to Material Conte e users' reliance on the ir	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen i-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. Thes C) in the finished parts. d, with respect to the information provided in this declarati ontained in Microchip's standard terms and conditions of s nt Declarations and shall not be liable for any damages, dire	to the best of tration of the obtain a test d the packing corporated's y Incorporated ded by raw m and raw materise estimates c on. The exclu ale. These are ect or indirect	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara aterial suppliers. In do not include sisive, limited p s provided in N	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct licrochip's al or		Copper Palladium	7440-21-3 Total Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 98 2 100.00 % of Total Weight	

	e: S24F 08/1 and	a) SOLI/SOIC 208in (4B)		ation Base oper Alloy ((-		-	geneous Materials: g. pc boards, display	s)	JEDEC 97 Product Markir and/or Pkg. Labeling e4
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	89.96	(mg) Total	Mold Compound	% ot Total Weight	66.29
Silica, vitreous	60676-86-0	Mold Compound	56.347	76.462	563,465		Silica, vitreous	60676-86-0	85.00	·
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5.510	40,603		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5.510	40,603		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.624	2.204	16,241		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.199	0.270	1,989		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	26.540	36.015	265,403			Total	100.00	
Iron	7439-89-6	Lead Frame	0.653	0.886	6,528	37.70	(mg) Total	Lead Frame	% of Total Weight	27.78
Silver	7440-22-4	Lead Frame	0.529	0.718	5,292		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.035	0.047	347		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.023	0.031	229		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.163	0.221	1,628		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.044	0.060	440		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.007	0.009	66			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.009	66	0.30	(mg) Total	Die Attach	% of Total Weight	0.22
Silicon	7440-21-3	Chip (Die)	5.410	7.341	54.100		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.150	0.204	1.500		Epoxy resin	Trade Secret	20	
Nickel	7440-02-0	Plating on external leads (pins)(PPF)	0.142	0.192	1,418		Metal oxide	Trade Secret	3	
Palladium	7440-05-3	Plating on external leads (pins)(PPF)	0.008	0.010	75		Gamma-butyrolactone	96-48-0	3	
Gold	7440-57-5	Plating on external leads (pins)(PPF)	0.001	0.001	8		Canina Bacyroidetenio	Total	100.00	1
0014	1440 01 0									5.41
		TOTALS	100 000	135 700						
		TOTALS: Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/		135.700 st Directive) a	1,000,000 and with EU	7.34	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	5.41
semiconductor device and its homogenous materials comply ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in	with EU Directive 200	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/	EU (RoHS Reca			0.20		7440-21-3	100	0.15
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in themical substance is absent from the list above, the chemica mology Incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulator	with EU Directive 200 ernal design controls, Il substance is NOT an this document, there ry concern for any reg	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/ supplier declarations, and /or analytical test dat intentional ingredient in the semiconductor der is no credible reason to believe that the unavoid ulatory scheme world-wide.	EU (RoHS Recas a. vice and, to the l lable impurity co	st Directive) a best of Micro oncentration	and with EU schip of the		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemica nology Incorporated's knowledge and belief as of the date o	with EU Directive 200 ernal design controls, Il substance is NOT an this document, there ry concern for any reg bility standard for plas	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/ supplier declarations, and /or analytical test dat intentional ingredient in the semiconductor der is no credible reason to believe that the unavoid ulatory scheme world-wide.	EU (RoHS Recas a. vice and, to the l lable impurity co	st Directive) a best of Micro oncentration	and with EU schip of the		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight 100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemica nology Incorporated's knowledge and belief as of the date o nical substance, if any, is not below the threshold of regulato ling compounds used by Microchip meet the UL94 V0 flamma	with EU Directive 200 ernal design controls, al substance is NOT an this document, there ry concern for any reg bility standard for plas stics/	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/ supplier declarations, and /or analytical test dat intentional ingredient in the semiconductor devises no credible reason to believe that the unavoid ulatory scheme world-wide. tics. You can access the UL iQTM family of data	EU (RoHS Recar a. vice and, to the l lable impurity co bases to obtain	st Directive) a best of Micro oncentration a test report	and with EU Inchip of the		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in themical substance is absent from the list above, the chemica nology Incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulato ling compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plat protective "tubes" in which the specific product is shipped a	with EU Directive 200 ernal design controls, al substance is NOT an this document, there ry concern for any reg bility standard for plas stics/ re made from polyvinyl is form concerning sul te best of its knowledg cause it has been com sclosure as trade secr of the average weight o	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/ supplier declarations, and /or analytical test dar intentional ingredient in the semiconductor der is no credible reason to believe that the unavoid ulatory scheme world-wide. tics. You can access the UL iQTM family of data chloride (PVC) plastic. "Window envelopes" us ostances restricted by RoHS in Microchip Techr e and belief, as of the date listed in this form. M piled based on the ranges provided in Material 3 ets and some information may not have been pi of these parts and the average weight of anticip	EU (RoHS Recat a. vice and, to the l lable impurity co bases to obtain ed to hold the p tology Incorpora icrochip Techno Safety Data Shec ated significant	st Directive) a best of Micro oncentration a test report acking slip o ated's semico logy Incorpo ets provided ontract asset	and with EU ochip of the t at on the outer onductor orated cannot by raw mblers and	0.20	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external	100 100.00 % of Total Weight 100 100.00	0.15
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in themical substance is absent from the list above, the chemica anology Incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulato ling compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plai protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in th ces in their original packing materials is true and correct to ti antee the completeness and accuracy of data in this form be rial suppliers. Supplier information is provided only as estimates	with EU Directive 200 ernal design controls, al substance is NOT an this document, there ry concern for any reg bility standard for plas stics/ re made from polyvinyl is form concerning sul be best of its knowledg cause it has been com sclosure as trade secr of the average weight of the average weight of the average weight of the average weight of the average weight of the average weight of the the average weight of the average weight of the average weight of the average weight of the average weight of the average weight of the average weight of the average weight of the average weight of the average weight of the average weight o	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/ supplier declarations, and /or analytical test dar intentional ingredient in the semiconductor der is no credible reason to believe that the unavoid ulatory scheme world-wide. tics. You can access the UL IQTM family of data chloride (PVC) plastic. "Window envelopes" us ostances restricted by RoHS in Microchip Techr e and belief, as of the date listed in this form. M piled based on the ranges provided in Material 3 ets and some information may not have been p of these parts and the average weight of anticip contained within silicon devices (silicon IC) in t with respect to the information provided in this	EU (RoHS Recar a. rice and, to the l lable impurity co bases to obtain ed to hold the p tology Incorpora crochip Techno Safety Data She ovided by subc ated significant he finished part declaration. The	st Directive) a best of Micro oncentration a test report acking slip o ated's semico ology Incorpo ets provided toxic metals s.	and with EU ochip of the t at on the outer onductor orated cannot by raw mblers and components.	0.20	(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)(PPF)	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.15
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in themical substance is absent from the list above, the chemica inology Incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulato ling compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/pla- protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in the cerial suppliers. Supplier information is often protected from de wraterial suppliers. Supplier information is provided only as estimates are estimates do not include trace levels of dopants, metals, a ochip Technology Incorporated does not provide any warrand uct warranties provided by Microchip Technology Incorporated be provided by Microchip Technology Incorporated believes of dopants, metals, and ochip Technology Incorporated does not provide any warrand uct warranties provided by Microchip Technology Incorporated believes in the provide any warrand the set of the provided by Microchip Technology Incorporated believes and provide any warrand the set of the provided by Microchip Technology Incorporated believes and provide and y warrand the set of the provide by Microchip Technology Incorporated believes and provide and y warrand the the set of the provide by Microchip Technology Incorporated believes and provide and y warrand the two provides and the provide and y warrand the provide and y warrand the two provides and the provide and y warrand the two provides and the provide and y warrand the two provides and the provide and y warrand the two provides and the provide and y warrand the two provides and the provide and y warrand the two provides and the provide and the provides an	with EU Directive 200 ernal design controls, al substance is NOT an this document, there ry concern for any reg bility standard for plas stics/ e made from polyvinyl is form concerning sul e best of its knowledg cause it has been com sclosure as trade secr of the average weight t and non-metal materials y, express or implied, ed and its subsidiaries pices. es to Material Content i s' reliance on the info	Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/ supplier declarations, and /or analytical test dat intentional ingredient in the semiconductor det is no credible reason to believe that the unavoid ulatory scheme world-wide. tics. You can access the UL iQTM family of data chloride (PVC) plastic. "Window envelopes" us pstances restricted by RoHS in Microchip Techr e and belief, as of the date listed in this form. M piled based on the ranges provided in Material 1 ets and some information may not have been p of these parts and the average weight of anticip contained within silicon devices (silicon IC) in t with respect to the information provided in this are contained in Microchip's standard terms ar Declarations and shall not be liable for any dam	EU (RoHS Recar a. rice and, to the l lable impurity co bases to obtain ed to hold the p tology Incorporr isorochip Techno Safety Data She ovided by subc ated significant he finished part declaration. The id conditions of ages, direct or i	at Directive) a best of Micro oncentration a test report acking slip o ated's semicc ology Incorpo ets provided ontract asset toxic metals s. e exclusive, li sale. These mdirect, cons	and with EU ochip of the t at on the outer orated cannot by raw mblers and components. imited are provided sequential or	0.20	(mg) Total Doped Gold (mg) Total Nickel	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)(PPF) 7440-02-0	100 100.00 % of Total Weight 100 100.00 % of Total Weight 94.50	0.15

MICROCHIP				nation Base / pper Alloy (C	-			ogeneous Materials: .g. pc boards, display:	s)	JEDEC 97 Product Markin and/or Pkg. Labeling
Semiconductor Devic	ce Type: S3AE 08 (Le									e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	97.68	(mg) Total	Mold Compound	% ot Total Weight	71.98
Silica, vitreous	60676-86-0	Mold Compound	61.183	83.025	611.830		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.409	5,983	44.088		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	4.409	5.983	44,088		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.764	2.393	17,635		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.216	0.293	2,159		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	22.298	30.259	222,985			Total	100.00	
Iron	7439-89-6	Lead Frame	0.548	0.744	5,485	31.67	(mg) Total	Lead Frame	% of Total Weight	23.34
Silver	7440-22-4	Lead Frame	0.445	0.603	4,446		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.029	0.040	292		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.019	0.026	193		Silver	7440-22-4	1.91	
Synthetic Rubber	308079-85-8	Die Attach	0.068	0.092	680		Zinc	7440-66-6	0.13	
Silica, vitreous	60676-86-0	Die Attach	0.060	0.081	595		Phosphorous	7723-14-0	0.08	
Solid Epoxy Resin	Trade Secret	Die Attach	0.021	0.029	213		I	Total	100.00	
Phenol Resin	Trade Secret	Die Attach	0.021	0.029	213	0.23	(mg) Total	Die Attach	% of Total Weight	0.17
Silicon	7440-21-3	Chip (Die)	3.510	4.763	35,100		Synthetic Rubber	308079-85-8	40.00	
Doped Gold	7440-57-5	Wire Bond	0.120	0.163	1.200		Silica, vitreous	60676-86-0	35.00	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.880	1.194	8,800		Solid Epoxy Resin	Trade Secret	12.50	
	1110 01 0	TOTALS:	100.000	135.700	1.000.000		Phenol Resin	Trade Secret	12.50	
			100.000	100.700	1,000,000		THENOITCESIII			
		g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Dire	ctive) and wit	th EU	4.76	(mg) Total	Total Chip (Die)	100.00 % of Total Weight	3.51
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the c prporated's knowledge and belief as of the date of this c	comply with EU Directive 20 via internal design controls hemical substance is NOT a locument, there is no credib	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	to the best o	f Microchip To	echnology	4.76	(mg) Total Doped Silicon	1		3.51
setive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this cl , is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f	comply with EU Directive 20 via internal design controls hemical substance is NOT a locument, there is no credib ny regulatory scheme world- lammability standard for pla	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen	to the best o tration of the	f Microchip Te chemical sub	echnology	4.76 0.16		Chip (Die) 7440-21-3	% of Total Weight	0.12
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified in chemical substance is absent from the list above, the cl corporated's knowledge and belief as of the date of this of y, is not below the threshold of regulatory concern for an Iding compounds used by Microchip meet the UL94 V0 f p://ul.com/global/eng/pages/offerings/industries/chemic	comply with EU Directive 20 via internal design controls hemical substance is NOT a locument, there is no credib ny regulatory scheme world- lammability standard for pla als/plastics/	0295/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide.	to the best o tration of the o obtain a tes	f Microchip To chemical sub t report at	echnology ostance, if		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl orporated's knowledge and belief as of the date of this day, is not below the threshold of regulatory concern for ar idding compounds used by Microchip meet the UL94 V0 f p://ul.com/global/eng/pages/offerings/industries/chemic: e protective "tubes" in which the specific product is ship d certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatic their original packing materials is true and correct to the e completeness and accuracy of data in this form becaus pplier information is often protected from disclosure as	comply with EU Directive 20 via internal design controls hemical substance is NOT a locument, there is no credib y regulatory scheme world- lammability standard for pla als/plastics/ opped are made from polyving on in this form concerning si best of its knowledge and b e it has been compiled base trade secrets and some info	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH a, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. Instics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In leifer, as of the date listed in this form. Microchip Technology In d on the ranges provided in Material Safety Data Sheets p rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	to the best o tration of the o obtain a tes ld the packin corporated's ogy Incorpor- rovided by ra- emblers and r	f Microchip Tr chemical sub t report at g slip on the o semiconduct ated cannot g aw material s	echnology ostance, if outer box or devices uarantee uppliers.		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl corporated's knowledge and belief as of the date of this co y, is not below the threshold of regulatory concern for ar iding compounds used by Microchip meet the UL94 V0 f p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship d certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatic their original packing materials is true and correct to the completeness and accuracy of data in this form becaus pplier information is often protected from disclosure as usual to the provided only as estimates of the average will use trace levels of dopants, metals, and non-metal mate crochip Technology Incorporated does not provide any w	comply with EU Directive 20 via internal design controls hemical substance is NOT a locument, there is no credib ny regulatory scheme world- lammability standard for pla als/plastics/ oped are made from polyving on in this form concerning s best of its knowledge and b e it has been compiled base trade secrets and some info eight of these parts and the rials contained within silicc varranty, express or implied and its subsidiaries are coi	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH a, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. Instics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In leifer, as of the date listed in this form. Microchip Technology In d on the ranges provided in Material Safety Data Sheets p rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	to the best o tration of the o obtain a tes o obtain a tes ld the packin corporated's ogy Incorpor- provided by ra- mblers and r nponents. Th on. The exclu	f Microchip Tr chemical sub t report at g slip on the of semiconduct ated cannot g aw material su aw material s ese estimates usive, limited	echnology sstance, if outer box or devices uarantee uppliers. uppliers. is do not product		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ci orporated's knowledge and belief as of the date of this ci r, is not below the threshold of regulatory concern for ar lding compounds used by Microchip meet the UL94 V0 f o://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship is certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informatic heir original packing materials is true and correct to the completeness and accuracy of data in this form becaus opplier information is often protected from disclosure as " promation is provided only as estimates of the average w lude trace levels of dopants, metals, and non-metal materials is rochip Technology Incorporated does not provide any w rranties provided by Microchip Technology Incorporater crochip's quotations, sales order acknowledgement, and prochip disclaims any duty to notify users of updates or	comply with EU Directive 20 via internal design controls hemical substance is NOT a locument, there is no credib hy regulatory scheme world- lammability standard for pla als/plastics/ opped are made from polyving on in this form concerning si best of its knowledge and b e it has been compiled base trade secrets and some info eight of these parts and the arrials contained within silico varranty, express or implied i and its subsidiaries are cool invoices. changes to Material Contemt	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS a, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. Instics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In lelief, as of the date listed in this form. Microchip Technology In do n the ranges provided in Material Safety Data Sheets p rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con on devices (silicon IC) in the finished parts. , with respect to the information provided in this declarati	to the best o tration of the o obtain a tes o obtain a tes corporated's ogy Incorpor- rovided by ri- mblers and ri- mponents. Th on. The exclu- ale. These ar ect or indirec	f Microchip Tr chemical sub t report at g slip on the o semiconduct ated cannot g aw material s aw material s ese estimates usive, limited e provided in t, consequent	echnology ostance, if outer box uarantee uppliers. uppliers. s do not product tial or	0.16	(mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.12

ICROCHIP Semiconductor Device Typ		T 02 m a SOT 22 me ma		nation Base A pper Alloy (C			•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Semiconductor Device Typ		"Contained In"	% I otal							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	6.62	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	5.630	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.406	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.406	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.162	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.020	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	0.833	100,314			Total		
Iron	7439-89-6	Lead Frame	0.247	0.020	2,468	0.87	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.017	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.001	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.047	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.009	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.005	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.002	263	0.06	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	0.623	75,000		Silver (Ag)	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.200	0.017	2.000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5 PI	ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.104	12,500	D	iglycidylether of bisphenol-F	54208-63-8	8	
		TOTALS:	100.000	8.300	1.000.000	_	Modified Amine	827-43-0	4	
	0.0002 -	Total Mass			.,,		Widdiniod / Willing	Total	100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ernal design controls,	supplier declarations, and /or analytical test data.				0.62	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
semiconductor device and its homogenous materials comply tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docum or act below the therefold of completion concerns	ernal design controls, I substance is NOT an ent, there is no credible	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concer	, to the best of	Microchip Teo	hnology	0.62	,		100	7.5
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemica	ernal design controls, I substance is NOT an ent, there is no credible latory scheme world-w bility standard for plas	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concer ride.	, to the best of ntration of the	Microchip Teo	hnology	0.62	,	7440-21-3	100	0.2
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via ini- nemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docum- is not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma	ernal design controls, I substance is NOT an ent, there is no credible latory scheme world-w bility standard for plas stics/	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and reason to believe that the unavoidable impurity concervide. stics. You can access the UL iQTM family of databases t	, to the best of ntration of the to obtain a test	Microchip Teo chemical subs report at	chnology tance, if		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via ini- hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume s not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/plage protective "tubes" in which the specific product is shipped an	ernal design controls, I substance is NOT an ent, there is no credible latory scheme world-w bility standard for plas stics/ e made from polyvinyl is form concerning sul s knowledge and belie en compiled based on d some information m d the average weight	supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity concer- vide. stics. You can access the UL iQTM family of databases t chloride (PVC) plastic. "Window envelopes" used to he bstances restricted by RoHS in Microchip Technology In f, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets pro ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	, to the best of ntration of the co obtain a test old the packing ncorporated's : gy Incorporate vided by raw m	Microchip Tec chemical subs report at y slip on the ou semiconducto d cannot guara iaterial suppliers. Ir	chnology stance, if iter box and r devices in intee the ers. Supplier iformation is	0.02	(mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight 100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via im- nemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume s not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped and in "reels" may be made from PVC plastic. whip Technology Incorporated believes the information in the original packing materials is true and correct to the best of in leteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets ard ded only as estimates of the average weight of these parts a	ernal design controls, I substance is NOT an ent, there is no credible latory scheme world-w bility standard for plas strics/ e made from polyvinyl is form concerning sul s knowledge and belie en compiled based on d some information m nd the average weight son devices (silicon IC) y, express or implied,	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and a reason to believe that the unavoidable impurity concer- ride. stics. You can access the UL iQTM family of databases t chloride (PVC) plastic. "Window envelopes" used to he bstances restricted by RoHS in Microchip Technology In f, as of the date listed in this form. Microchip Technology In the ranges provided by subcontract assemblers is of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarat	, to the best of ntration of the co obtain a test old the packing ncorporated's : gy Incorporate yolded by raw m and raw materi see estimates d tion. The exclu	Microchip Tec chemical subs report at y slip on the ou semiconducto d cannot guara iaterial suppliers. Ir lo not include sive, limited pi	chnology stance, if r devices in intee the ers. Supplier formation is trace levels	0.02	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via im- nemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped and in "reels" may be made from PVC plastic. whip Technology Incorporated believes the information in the original packing materials is true and correct to the best of if leteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets ard ded only as estimates of the average weight of these parts a pants, metals, and non-metal materials contained within silice hochip Technology Incorporated does not provide any warrant in this provided by Microchip Technology Incorporated and it	ernal design controls, al substance is NOT an ent, there is no credible latory scheme world-w bility standard for plas stics/ e made from polyvinyl is form concerning sul s knowledge and belie en compiled based on d some information m d the average weight con devices (silicon IC) y, express or implied, s subsidiaries are control	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity concer- vide. stics. You can access the UL iQTM family of databases t chloride (PVC) plastic. "Window envelopes" used to he bstances restricted by RoHS in Microchip Technology In f, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets pro- ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declaration tained in Microchip's standard terms and conditions of a Declarations and shall not be liable for any damages, di	, to the best of ntration of the co obtain a test old the packing ncorporated's : yy Incorporated yided by raw m and raw materi see estimates d tion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guare aterial supplie al suppliers. Ir lo not include sive, limited pi provided in N , consequentia	chnology stance, if uter box and r devices in intee the ers. Supplier information is trace levels roduct licrochip's al or	0.02	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.2

Semiconductor Device Typ	e: CT and OT	15 // and) SOT-234 ///7		nation Base A pper Alloy (C			•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling e3
Semiconductor Device Typ	e: Cland OI 0	"Contained In"	% Iotal		1					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	9.42	(mg) Total	Mold Compound	% ot Total Weight	63.21
Silica, vitreous	60676-86-0	Mold Compound	53.729	8.006	537,285		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.872	0.577	38,716		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.872	0.577	38,716		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.549	0.231	15,486		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.190	0.028	1,896		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	27.037	4.029	270,371			Total		
Iron	7439-89-6	Lead Frame	0.665	0.099	6,651	4.22	(mg) Total	Lead Frame	% of Total Weight	28.3
Silver	7440-22-4	Lead Frame	0.539	0.080	5,391		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.035	0.005	354		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.023	0.003	233		Silver	7440-22-4	1.91	
Metal oxide	Trade Secret	Die Attach	0.845	0.126	8,448		Zinc	7440-66-6	0.13	
Epoxy resins	Trade Secret	Die Attach	0.845	0.126	8,448		Phosphorous	7723-14-0	0.08	
Glycol ethers	Trade Secret	Die Attach	0.640	0.095	6,400			Total		
Curing / Hardener	Trade Secret	Die Attach	0.230	0.034	2,304	0.38	(mg) Total	Die Attach	% of Total Weight	2.56
Silicon	7440-21-3	Chip (Die)	3.170	0.472	31,700		Metal oxide	Trade Secret	33	
Gold	7440-57-5	Wire Bond	0.740	0.110	7,400		Epoxy resins	Trade Secret	33	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.020	0.301	20,200		Glycol ethers	Trade Secret	25	
		TOTALS:	100.000	14.900	1,000,000		Curing / Hardener	Trade Secret	9	
HANA / Material compilation	0.0149	g Total Mass						Total	100.00	-
	, 20 2	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ctive) and with	EU	0.47	Total (mg)	Chip (Die)	% of Total Weight	3.17
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via int	ternal design contro	Is, supplier declarations, and /or analytical test data.		·		0.47	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	100	3.17
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via int nemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume s not below the threshold of regulatory concern for any regu	ternal design contro al substance is NOT ent, there is no credi ulatory scheme work	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide.	, to the best of ntration of the	Microchip Tec chemical subs	chnology	0.47		7440-21-3	100	3.17
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified via int nemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume s not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma	ternal design contro al substance is NOT ent, there is no credi ulatory scheme work ability standard for p	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide.	, to the best of ntration of the	Microchip Tec chemical subs	chnology	0.47		7440-21-3	100	0.74
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified via int nemical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this docume s not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/plas rotective "tubes" in which the specific product is shipped an	ternal design contro al substance is NOT ent, there is no credi Ilatory scheme work ability standard for p stics/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concel d-wide. lastics. You can access the UL iQTM family of databases t	, to the best of ntration of the o obtain a test	Microchip Tec chemical subs report at	chnology stance, if		Doped Silicon	7440-21-3 Total	100 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ing compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped an in "reels" may be made from PVC plastic.	ternal design contro al substance is NOT ent, there is no credi ulatory scheme work ability standard for p stics/ re made from polyvi	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to he	, to the best of ntration of the o obtain a test old the packing	Microchip Tec chemical subs report at g slip on the or	chnology stance, if uter box and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight 100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ing compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped an	ternal design contro al substance is NOT ent, there is no credi ulatory scheme work ability standard for p stics/ re made from polyvi his form concerning is knowledge and be en compiled based nd some information nd the average weig	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer d-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology In elief, as of the date listed in Material Safety Data Sheets prov or may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The	, to the best of htration of the o obtain a test old the packing ncorporated's ny Incorporate vided by raw m	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara aterial supplices. In	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via inthemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/plat- protective "tubes" in which the specific product is shipped ar in "reels" may be made from PVC plastic. whip Technology Incorporated believes the information in the original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets an ded only as estimates of the average weight of these parts a	ternal design contro al substance is NOT ent, there is no credi ulatory scheme work ability standard for p stics/ re made from polyvi his form concerning ts knowledge and be en compiled based d some information nd the average weig con devices (silicon ty, express or implie	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer d-wide. Ilastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology In the anges provided in Material Safety Data Sheets pro- in may not have been provided by subcontract assemblers a h of anticipated significant toxic metals components. The IC) in the finished parts.	, to the best of ntration of the o obtain a test old the packing ncorporated's gy Incorporate vided by raw mater and raw mater se estimates o	Microchip Ter chemical subs report at g slip on the or semiconducto d cannot guara aterial suppliers. In lo not include sive, limited p	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Indiance with the above EU Directives has been verified via inter- termical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu- ng compounds used by Microchip meet the UL94 V0 flamma ul.com/global/eng/pages/offerings/industries/chemicals/plas- rotective "tubes" in which the specific product is shipped an n "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in the original packing materials is true and correct to the best of it leteness and accuracy of data in this form because it has be nation is often protected from disclosure as trade secrets and ded only as estimates of the average weight of these parts al pants, metals, and non-metal materials contained within silic chip Technology Incorporated does not provide any warrant nities provided by Microchip Technology Incorporated and it tions, sales order acknowledgement, and invoices. chip disclaims any duty to notify users of updates or change wise, suffered by users or third parties as a result of the use	ternal design contro al substance is NOT ent, there is no credi latory scheme work ability standard for p stics/ re made from polyvi is form concerning is knowledge and be ren compiled based i d some information nd the average weig con devices (silicon ty, express or implie is subsidiaries are ci es to Material Conte	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer d-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology In flief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers i ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of in the Declarations and shall not be liable for any damages, di	, to the best of htration of the o obtain a test old the packing ncorporated's yy Incorporate vided by raw m and raw mater and raw mater se estimates o cion. The exclus sale. These are rect or indirect	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara- naterial suppliers. In aterial suppliers. In to not include sive, limited p e provided in N	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.11	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100 100.00 % of Total Weight 100 100.00	0.74
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified via inter- period substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu- ng compounds used by Microchip meet the UL94 V0 flamma (ul.com/global/eng/pages/offerings/industries/chemicals/plass rotective "tubes" in which the specific product is shipped and n "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in the original packing materials is true and correct to the best of it leteness and accuracy of data in this form because it has be nation is often protected from disclosure as trade secrets and ded only as estimates of the average weight of these parts ale pants, metals, and non-metal materials contained within silic chip Technology Incorporated does not provide any warrand nties provided by Microchip Technology Incorporated and it	ternal design contro al substance is NOT ent, there is no credi latory scheme work ability standard for p stics/ re made from polyvi is form concerning is knowledge and be ren compiled based i d some information nd the average weig con devices (silicon ty, express or implie is subsidiaries are ci es to Material Conte	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer d-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology In flief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers i ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of in the Declarations and shall not be liable for any damages, di	, to the best of htration of the o obtain a test old the packing ncorporated's yy Incorporate vided by raw m and raw mater and raw mater se estimates o cion. The exclus sale. These are rect or indirect	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara- naterial suppliers. In aterial suppliers. In to not include sive, limited p e provided in N	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.11	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00	0.74

		E (nation Base / pper Alloy (C				geneous Materials: J. pc boards, displays	5)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	ce Type: CT and OT 0	5 (Lead) SOT-23 (C7) "Contained In"	% Iotal	1						es
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	12.77	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	11.097	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	0.979	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	0.652	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.040	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	1.605	100,314			Total		
Iron	7439-89-6	Lead Frame	0.247	0.039	2,468	1.68	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.032	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.002	131 87		Iron	7439-89-6	2.35	
Phosphorous Silver (Ag)	7723-14-0 7440-22-4	Lead Frame Die Attach	0.009 0.563	0.001	87 5.625		Silver	7440-22-4 7440-66-6	1.91 0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.090	1,050		Phosphorous	7440-06-0	0.13	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.009	563		Filospiloious	Total		
Modified Amine	827-43-0	Die Attach	0.036	0.009	263	0.12	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500			0.12		7440-22-4		0.75
Copper	7440-21-3	Wire Bond palladium coated copper (CuPd)	0.197	1.200 0.031	75,000 1.965		Silver (Ag) Modified Epoxy Resin	13561-08-5	75 14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd) Wire Bond palladium coated copper (CuPd)	0.004	0.031	35	r	Diglycidylether of bisphenol-F	54208-63-8	14	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.200	12,500	L	Modified Amine	827-43-0	° 4	
101	140010	TOTALS:	100.000	16.000	1,000,000		Woullied Amilie	Total		
	0.0100		100.000	10.000	1,000,000		T (1 ()			
		g Total Mass				1.20	Total (mg)	Chip (Die)	% of Total Weight	7.5
is semiconductor device and its homogenous materials rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	5 Recast Direc	tive) and with	EU		Doped Silicon	7440-21-3	100	
ompliance with the above EU Directives has been verified	d via internal design control	s, supplier declarations, and /or analytical test data.						Total	100.00	
								Total	100.00	
corporated's knowledge and belief as of the date of this of	document, there is no credib	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen -wide.				0.03	(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
corporated's knowledge and belief as of the date of this c y, is not below the threshold of regulatory concern for a olding compounds used by Microchip meet the UL94 V0 (document, there is no credib any regulatory scheme world flammability standard for pla	le reason to believe that the unavoidable impurity concen	tration of the	chemical sub		0.03	(mg) Total Copper	Wire Bond - Copper, palladium		0.2
corporated's knowledge and belief as of the date of this of ny, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 is tp://ul.com/global/eng/pages/offerings/industries/chemic ne protective "tubes" in which the specific product is ship	document, there is no credib any regulatory scheme world flammability standard for pla cals/plastics/	ble reason to believe that the unavoidable impurity concenwide.	tration of the	chemical subs	stance, if	0.03		Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 98 2	0.2
corporated's knowledge and belief as of the date of this of y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 ity://ul.com/global/eng/gages/offerings/industries/chemic- he protective "tubes" in which the specific product is ship artain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information ieir original packing materials is true and correct to the be ompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade sec	document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyvin ion in this form concerning s sest of its knowledge and beli t has been compiled based o icrets and some information 1 parts and the average weigh	Ne reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In lef, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	tration of the o obtain a test Id the packing corporated's a y Incorporated ided by raw m nd raw materi	chemical subs report at slip on the or semiconductor d cannot guara aterial suppliers. Il	stance, if uter box and r devices in antee the ars. Supplier nformation is	0.03	Copper	Wire Bond - Copper, palladium coated (CuPd) 7440-50-8	% of Total Weight 98 2	0.2
corporated's knowledge and belief as of the date of this of y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 it ttp://ul.com/global/eng/pages/offerings/industries/chemic: he protective "tubes" in which the specific product is ship ertain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatio eler original packing materials is true and correct to the brompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade see rovided only as estimates of the average weight of these i dopants, metals, and non-metal materials contained with icrochip Technology Incorporated does not provide any v	document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/ ipped are made from polyvin ion in this form concerning s best of its knowledge and beli t has been compiled based o crets and some information i parts and the average weigh thin silicon devices (silicon IC warranty, express or implied	Ne reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In lef, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	tration of the o obtain a test Id the packing corporated's 4 y Incorporated ided by raw m nd raw materi se estimates d on. The exclu:	chemical sub- report at I slip on the or semiconducto d cannot guar: aterial supplie al suppliers. In o not include sive, limited p	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct	0.03	Copper Palladium (mg) Total	Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 98 2	0.2
corporated's knowledge and belief as of the date of this of y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 ty/lul.com/global/eng/pages/offerings/industries/chemic- ne protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information eir original packing materials is true and correct to the bb ompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade sec ovided only as estimates of the average weight of these dopants, metals, and non-metal materials contained with icrochip Technology Incorporated does not provide any ti icrochip Technology Incorporated does not provide any to iotations, sales order acknowledgement, and invoices.	document, there is no credib any regulatory scheme world- if fammability standard for pla cals/plastics/ ipped are made from polyvin ion in this form concerning s best of its knowledge and beli thas been compiled based o crets and some information n parts and the average weigh thin silicon devices (silicon 10 warranty, express or implied and its subsidiaries are co r changes to Material Conten the users' reliance on the inf	Ne reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts.	tration of the o obtain a test ld the packing corporated's s y Incorporated ided by raw m and raw materi se estimates d on. The exclus ale. These are ect or indirect	chemical sub report at semiconducto d cannot guara aterial supplic al supplices. I o not include sive, limited p provided in M , consequenti	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or		Copper Palladium (mg) Total	Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 98 2 100.00	
corporated's knowledge and belief as of the date of this of y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 [p://ul.com/global/eng/pages/offerings/industries/chemic: e protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. crocchip Technology Incorporated believes the informatic eir original packing materials is true and correct to the be mpleteness and accuracy of data in this form because it ormation is often protected from disclosure as trade sec ovided only as estimates of the average weight of these dopants, metals, and non-metal materials contained with crochip Technology Incorporated does not provide any to rranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or rerwise, suffered by users or third parties as a result of the suffered by asers or third parties as a result of the suffered by asers or third parties as a result of the suffered by asers or third parties as a result of the suffered by users or third parties as a result of the suffered by users or third parties as a result of the suffered by users or third parties as a result of the suffered by users or third parties as a result of the suffered by users or third parties as a result of the suffered by users or third parties as a result of the suffered by users or third parties as a result of the suffered by users or third parties as a result of the suffered by users or third parties as a result of the suffered by users or third parties as a result of the suffered by users or third parties as a result of the sufference sufference by the sufference	document, there is no credib any regulatory scheme world- if fammability standard for pla cals/plastics/ ipped are made from polyvin ion in this form concerning s best of its knowledge and beli thas been compiled based o crets and some information n parts and the average weigh thin silicon devices (silicon 10 warranty, express or implied and its subsidiaries are co r changes to Material Conten the users' reliance on the inf	be reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ier, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a it of anticipated significant toxic metals components. The C) in the finished parts. I, with respect to the information provided in this declarati Intained in Microchip's standard terms and conditions of s t Declarations and shall not be liable for any damages, dir	tration of the o obtain a test ld the packing corporated's s y Incorporated ided by raw m and raw materi se estimates d on. The exclus ale. These are ect or indirect	chemical sub report at semiconducto d cannot guara aterial supplic al supplices. I o not include sive, limited p provided in M , consequenti	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or		Copper Palladium (mg) Total	Wire Bond - Copper, palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 98 2 100.00 % of Total Weight 100.00	

Semiconductor Device Typ	e: OT 05 (Lead)	SOT-23 (P6)		nation Base A pper Alloy (C			•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Total			8.39	(mg) Total	Mold Compound	% ot Total Weight	49.38
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.00				40.00
Silica, vitreous	60676-86-0	Mold Compound	41.973	7.135	419,730		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.025	0.514	30,245		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.025	0.514	30,245		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.210	0.206	12,098		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.148	0.025	1,481		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	40.919	6.956	409,187			Total	100.00	
Iron	7439-89-6	Lead Frame	1.007	0.171	10,065	7.28	(mg) Total	Lead Frame	% of Total Weight	42.83
Silver	7440-22-4	Lead Frame	0.816	0.139	8,159		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.054	0.009	535	1	Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.035	0.006	353		Silver	7440-22-4	1.91	
Aluminum oxide	1344-28-1	Die Attach	0.106	0.018	1,059	1	Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.193	0.033	1,925		Phosphorous	7723-14-0	0.08	
Amine (Trade Secret - 10039)	(Trade Secret - 1	Die Attach	0.012	0.002	116			Total	100.00	-
Silicon	7440-21-3	Chip (Die)	4.380	0.745	43,800	0.05	(mg) Total	Die Attach	% of Total Weight	0.31
Gold	7440-57-5	Wire Bond	0.430	0.073	4.300		Aluminum oxide	1344-28-1	34	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.670	0.454	26,700		Epoxy resin	Trade Secret	62	
		TOTALS:	100.000	17.000	1.000.000	An	nine (Trade Secret - 10039)		4	
	0.0170	g Total Mass			,,			Total	100.00	U
pliance with the above EU Directives has been verified via in	ternal design control	s, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemica rporated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu	al substance is NOT a ent, there is no credil	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity concert					Doped Silicon	7440-21-3 Total	100 100.00	
chemical substance is absent from the list above, the chemica rporated's knowledge and belief as of the date of this docum , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma	al substance is NOT a ent, there is no credil latory scheme world ability standard for pl	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide.	ntration of the	chemical subs		0.07	Doped Silicon (mg) Total			0.43
· chemical substance is absent from the list above, the chemica	al substance is NOT a ent, there is no credil llatory scheme world ability standard for pl stics/	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity concer- -wide. astics. You can access the UL iQTM family of databases t	ntration of the	chemical subs	stance, if	0.07		Total Wire Bond 7440-57-5	100.00 % of Total Weight	0.43
chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this docume, is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/pla: protective "tubes" in which the specific product is shipped a ain "reels" may be made from PVC plastic. rrochip Technology Incorporated believes the information in the roriginal packing materials is true and correct to the best of if upleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets ar oided only as estimates of the average weight of these parts a opants, metals, and non-metal materials contained within silie rochip Technology Incorporated does not provide any warran	al substance is NOT a ent, there is no credil ulatory scheme world ability standard for pl stics/ re made from polyvir is form concerning s is knowledge and bel en compiled based o d some information at the average weigi con devices (silicon I ty, express or implier	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets pro may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts.	ntration of the o obtain a test old the packing ncorporated's i yy Incorporate vided by raw m and raw materi se estimates c	chemical subs report at g slip on the ou semiconducto d cannot guara aterial supplie al suppliers. Ir lo not include sive, limited pi	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct		(mg) Total	Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100 100.00	
chemical substance is absent from the list above, the chemical rporated's knowledge and belief as of the date of this docum- is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plar protective "tubes" in which the specific product is shipped a ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in th r original packing materials is true and correct to the best of if pleteness and accuracy of data in this form because it has be mation is of then protected from disclosure as trade secrets ar vided only as estimates of the average weight of these parts a opants, metals, and non-metal materials contained within sili	al substance is NOT a ent, there is no credil latory scheme world ability standard for pl stics/ re made from polyvir his form concerning s ts knowledge and bel en compiled based d is some information nd the average weigh con devices (silicon I ty, express or implied ts ubsidiaries are co es to Material Conter	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t byl chloride (PVC) plastic. "Window envelopes" used to be substances restricted by ROHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The C) in the finished parts. 4, with respect to the information provided in this declarat initianed in Microchip's standard terms and conditions of a the Declarations and shall not be liable for any damages, di	ntration of the o obtain a test old the packing ncorporated's gy Incorporated vided by raw m and raw materi use estimates o tion. The exclu sale. These are rect or indirect	chemical subs report at g slip on the ou semiconducto d cannot guars aterial suppliers. Ir lo not include sive, limited pi e provided in M	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct dicrochip's al or	0.07	(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight	2.67

MICROCHIP Semiconductor Device Type	e: CH and OT	06 (Lead) SOT-23 (C8 / CZ)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Davis Oshatawa		"Contained In" Sub-Component	% Total Weight			13.57	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number		•	mg/part	ppm		(0)			1
Silica, vitreous	60676-86-0	Mold Compound	67.830	11.531	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.332	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.041	2,394		Carbon Black	1333-86-4	0.30	<u> </u>
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468	1.79	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.034	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.002	131		Iron	7439-89-6	2.35	1
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87		Silver	7440-22-4	1.91	
Epoxy resin	Trade Secret	Die Attach	0.338	0.057	3,375		Zinc	7440-66-6	0.13	1
Silicon dioxide	Trade Secret	Die Attach	0.338	0.057	3,375		Phosphorous	7723-14-0	0.08	1 1
Curing / Hardener	Trade Secret	Die Attach	0.075	0.013	750		· · · · ·	Total	100.00	<u> </u>
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75.000	0.13	(mg) Total	Die Attach	% of Total Weight	
Gold	7440-57-5	Wire Bond	0.200	0.034	2.000	0.10	Epoxy resin	Trade Secret	45	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.213	12,500		Silicon dioxide	Trade Secret	45	1 1
100	7440-31-3	TOTALS:	100.000	17.000	1.000.000		Curing / Hardener	Trade Secret	10	1 1
			100.000	17.000	1,000,000		Culling / Hardener	Total	100.00	<u> </u>
		g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	tive) and with	EU	1.28	Total (mg)	Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via inte	ernal design contro	ls, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemical Incorporated's knowledge and belief as of the date of this documer any, is not below the threshold of regulatory concern for any regul	nt, there is no credi	ble reason to believe that the unavoidable impurity concer						Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flammat http://ul.com/global/eng/pages/offerings/industries/chemicals/plase		lastics. You can access the UL iQTM family of databases to	o obtain a test	report at		0.03	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic.	e made from polyvi	nyl chloride (PVC) plastic. "Window envelopes" used to ho	old the packing	slip on the ou	iter box and		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in thi their original packing materials is true and correct to the best of its completeness and accuracy of data in this form because it has bee information is often protected from disclosure as trade secrets and provided only as estimates of the average weight of these parts an of dopants, metals, and non-metal materials contained within silico	knowledge and be en compiled based d some information d the average weig	lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a h of anticipated significant toxic metals components. The	y Incorporated vided by raw m and raw materi	l cannot guara aterial supplie al suppliers. Ir	antee the ers. Supplier oformation is			Total	100.00	
Microchip Technology Incorporated does not provide any warranty warranties provided by Microchip Technology Incorporated and its quotations, sales order acknowledgement, and invoices.						0.21	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or change otherwise, suffered by users or third parties as a result of the users of this Certificate of Compliance for semiconductor products.							Tin	7440-31-5	100.00	
								Total	100.00	
						17.000				100.000

CROCHIP Semiconductor Device	Type: OT 06 (Lead) SO	I-23 (6A)		ation Base A oper Alloy (C				ogeneous Materials: a.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling e4
		"Contained In"	% Total				()= ()			
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	7.94	(mg) Total	Mold Compound	% ot Total Weight	48.26
Silica, vitreous (or fused)	60676-86-0	Mold Compound	41.021	6.748	410,210		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.199	0.691	41,986		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.896	0.476	28,956		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.145	0.024	1,448		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	48.319	7.949	483,192			Total		
Iron	7439-89-6	Lead Frame	1.142	0.188	11,422	8.17	(mg) Total	Lead Frame	% of Total Weight	49.66
Phosphorous	7723-14-0	Lead Frame	0.124	0.020	1,242		Copper	7440-50-8	97.30	
Zinc (Metal)	7440-44-0	Lead Frame	0.074	0.012	745		Iron	7439-89-6	2.30	
Aluminum oxide	1344-28-1	Die Attach	0.143	0.024	1,435		Phosphorous	7723-14-0	0.25	
Epoxy resin	Trade Secret	Die Attach	0.261	0.043	2,609		Zinc (Metal)	7440-44-0	0.15	
Amine (Trade Secret - 10039)	Trade Secret	Die Attach	0.016	0.003	157			Total	100.00	
Silicon	7440-21-3	Chip (Die)	1.090	0.179	10,900	0.07	(mg) Total	Die Attach	% of Total Weight	0.42
Gold	7440-57-5	Wire Bond	0.120	0.020	1.200		Aluminum oxide	1344-28-1	34	
Nickel	7440-02-0	Plating on external leads (pins)	0.431	0.071	4,308		Epoxy resin	Trade Secret	62	
Palladium	7440-05-3	Plating on external leads (pins)	0.015	0.002	145	۵	mine (Trade Secret - 10039)		4	
		Plating on external leads (pins)	0.005	0.001	47	~	The (Thade Beerer Tobbo)	Total		
Gold	7//0-57-5				47				100.00	
Gold	7440-57-5			16 450	1 000 000	0.40	Tatal (man)	Ohim (Dia)	0/ of Total Mainlat	
niconductor device and its homogenous materials e 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.0165 g To omply with EU Directive 2002/9	TOTAI otal Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU	S: 100.000	16.450 ctive) and with	1,000,000 n EU	0.18	Total (mg) Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total	1	0.12
emiconductor device and its homogenous materials ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified emical substance is absent from the list above, the ch	0.0165 g Tr comply with EU Directive 2002/9 via internal design controls, sup emical substance is NOT an int	TOTAI otal Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU oplier declarations, and /or analytical test data. entional ingredient in the semiconductor device	S: 100.000 (RoHS Recast Dire and, to the best o	ctive) and with f Microchip Te	n EU chnology	0.18		7440-21-3	100	0.12
emiconductor device and its homogenous materials or ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified emical substance is absent from the list above, the ch orated's knowledge and belief as of the date of this d	0.0165 g Tr omply with EU Directive 2002/9 via internal design controls, sup emical substance is NOT an int pocument, there is no credible re	TOTAI otal Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU oplier declarations, and /or analytical test data. entional ingredient in the semiconductor device ason to believe that the unavoidable impurity c	S: 100.000 (RoHS Recast Dire and, to the best o	ctive) and with f Microchip Te	n EU chnology		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
miconductor device and its homogenous materials o re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified mical substance is absent from the list above, the ch rated's knowledge and belief as of the date of this d not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 fl	0.0165 g Tr omply with EU Directive 2002/9 via internal design controls, sup emical substance is NOT an int ocument, there is no credible re y regulatory scheme world-wide ammability standard for plastic:	TOTAI otal Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU oplier declarations, and /or analytical test data. entional ingredient in the semiconductor device ason to believe that the unavoidable impurity c a.	S: 100.000 (RoHS Recast Dire and, to the best o incentration of the	ctive) and with f Microchip Te chemical sub	n EU chnology		Opped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight 100	
emiconductor device and its homogenous materials or ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified simical substance is absent from the list above, the ch orated's knowledge and belief as of the date of this d not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 fi I.com/global/eng/pages/offerings/industries/chemica otective "tubes" in which the specific product is ship	0.0165 g Tr omply with EU Directive 2002/9 via internal design controls, sup emical substance is NOT an int ocument, there is no credible re y regulatory scheme world-wide ammability standard for plastic Is/plastics/	TOTAI Datal Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU opplier declarations, and /or analytical test data. entional ingredient in the semiconductor device ason to believe that the unavoidable impurity c s. You can access the UL iQTM family of databa	S: 100.000 (RoHS Recast Dire and, to the best o uncentration of the ses to obtain a test	ctive) and with f Microchip Te chemical sub t report at	n EU chnology stance, if	0.02	Opped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
Gold emiconductor device and its homogenous materials or ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified emical substance is absent from the list above, the ch orated's knowledge and belief as of the date of this d not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 fi I.com/global/eng/pages/offerings/industries/chemica otective "tubes" in which the specific product is ship "reels" may be made from PVC plastic. hip Technology Incorporated believes the informatio riginal packing materials is true and correct to the be eteness and accuracy of data in this form because it I ation is often protected from disclosure as trade seci of dopants, metals, and non-metal materials containe	0.0165 g Tr omply with EU Directive 2002/9 via internal design controls, sup emical substance is NOT an int ocument, there is no credible re y regulatory scheme world-wide ammability standard for plastic: (s/plastics/ ped are made from polyvinyl ch n in this form concerning subst st of its knowledge and belief, a nas been compiled based on the ets and some information may / parts and the average weight c	TOTAI Datal Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU opplier declarations, and /or analytical test data. entional ingredient in the semiconductor device ason to believe that the unavoidable impurity c a. s. You can access the UL iQTM family of databa loride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technol s of the date listed in this form. Microchip Technol ranges provided in Material Safety Data Sheet not have been provided by subcontract assemt of anticipated significant toxic metals compone	S: 100.000 (RoHS Recast Dire and, to the best or oncentration of the ses to obtain a test to hold the packin and the packin and the packin bology Incorporated's nology Incorporated's provided by raw rater	ctive) and with f Microchip Te chemical sub t report at g slip on the o semiconducto d cannot guar naterial suppli	n EU chnology stance, if uter box and or devices in antee the ers. Supplier information	0.02	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external	100 100.00 % of Total Weight 100 100.00	0.12
emiconductor device and its homogenous materials or ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified emical substance is absent from the list above, the ch orated's knowledge and belief as of the date of this d not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 fl ul.com/global/eng/pages/offerings/industries/chemical otective "tubes" in which the specific product is ship "reels" may be made from PVC plastic. hip Technology Incorporated believes the informatio riginal packing materials is true and correct to the be eteness and accuracy of data in this form because it I atton is often protected from disclosure as trade sect	0.0165 g Tr omply with EU Directive 2002/9 via internal design controls, sup emical substance is NOT an int ocument, there is no credible re y regulatory scheme world-wide ammability standard for plastic is/plastics/ ped are made from polyvinyl ch n in this form concerning subst st of its knowledge and belief, a has been compiled based on the es and some information may or parts and the average weight of d within silicon devices (silicon arranty, express or implied, with	TOTAI Datal Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU opplier declarations, and /or analytical test data. entional ingredient in the semiconductor device ason to believe that the unavoidable impurity c a. s. You can access the UL iQTM family of databa loride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technol s of the date listed in this form. Microchip Technol ranges provided in Material Safety Data Sheet not have been provided in Material Safety Data Sheet of anticipated significant toxic metals compone IC) in the finished parts.	S: 100.000 (RoHS Recast Dire and, to the best or nocentration of the ses to obtain a test to hold the packin- gy Incorporated's nology Incorporated's nology Incorporate provided by raw m ters and raw mater ts. These estimate claration. The exclu	ctive) and with f Microchip Te chemical sub t report at g slip on the o semiconducto d cannot guar naterial suppliers. I al suppliers. I so do not inclu	n EU chnology stance, if uter box and or devices in antee the ers. Supplier information de trace	0.02	(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.12

16.450

		90 a. a. SOT 22 and		ation Base A oper Alloy (C				ogeneous Materials: g. pc boards, displays)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Semiconductor Device Type	: CH and OI	U6 (Lead) SO I-23 (C8) "Contained In"	% Total	-	-					63
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	13.57	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	11.790	693.542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	1.041	61.207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	0.693	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.042	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	1.705	100.314		Ourboin Black	Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.042	2.468	1.79	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7439-89-6	Lead Frame	0.200	0.034	2,400	1.79		7440-50-8		10.5
							Copper		95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.002	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87		Silver	7440-22-4	1.91	
Epoxy resin	Trade Secret	Die Attach	0.563	0.096	5,625		Zinc	7440-66-6	0.13	
Silicon dioxide	Trade Secret	Die Attach	0.169	0.029	1,688		Phosphorous	7723-14-0	0.08	
Curing / Hardener	Polymeric Retanning Agent	Die Attach	0.019	0.003	188			Total	100.00	
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000	0.13	(mg) Total	Die Attach	% of Total Weight	0.75
				0.033		0.13				0.75
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197		1,965		Epoxy resin	Trade Secret	75	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.001	35		Silicon dioxide	7631-86-9	23	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.213	12,500		Curing / Hardener	Trade Secret	3	
		TOTALS:	100.000	17.000	1,000,000			Total	100.00	
	0.0170	g Total Mass				1.28	Total (mg)	Chip (Die)	% of Total Weight	7.5
s semiconductor device and its homogenous materials comply active 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol	IS Recast Direc	tive) and with	EU		Doped Silicon	7440-21-3	100	
ompliance with the above EU Directives has been verified via inte	rnal design contro	Is, supplier declarations, and /or analytical test data.						Total	100.00	
n chemical substance is absent from the list above, the chemical corporated's knowledge and belief as of the date of this documer y, is not below the threshold of regulatory concern for any regula	nt, there is no cred	ble reason to believe that the unavoidable impurity conce				0.03	(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
lding compounds used by Microchip meet the UL94 V0 flammat p://ul.com/global/eng/pages/offerings/industries/chemicals/plast		lastics. You can access the UL iQTM family of databases	to obtain a test	report at			Copper	7440-50-8	98	
e protective "tubes" in which the specific product is shipped are	a made from polyvi	nyl chloride (PVC) plastic. "Window envelopes" used to h	old the packing	slip on the ou	iter box and					
rtain "reels" may be made from PVC plastic.				•	ator box and		Palladium	7440-05-3	2	
							Palladium	7440-05-3 Total	2 100.00	
tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this if original packing materials is true and correct to the best of its mpleteness and accuracy of data in this form because it has bee ormation is often protected from disclosure as trade secrets and voided only as estimates of the average weight of these parts an dopants, metals, and non-metal materials contained within silico	s knowledge and be en compiled based d some information d the average weig	lief, as of the date listed in this form. Microchip Technolo on the ranges provided in Material Safety Data Sheets pro may not have been provided by subcontract assemblers ht of anticipated significant toxic metals components. The	gy Incorporated vided by raw m and raw materi	l cannot guara aterial supplie al suppliers. In	r devices in antee the ers. Supplier nformation is		Palladium			
prochip Technology Incorporated believes the information in this ir original packing materials is true and correct to the best of its mpleteness and accuracy of data in this form because it has bee ormation is often protected from disclosure as trade secrets and wided only as estimates of the average weight of these parts an	s knowledge and be en compiled based d some information d the average weig on devices (silicon y, express or implie	Nief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declara	gy Incorporated vided by raw m and raw materia ese estimates d tion. The exclusion	l cannot guara aterial supplie al suppliers. In o not include sive, limited p	r devices in antee the ers. Supplier nformation is trace levels roduct	0.21	Palladium (mg) Total	Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1		1.25
crochip Technology Incorporated believes the information in this ir original packing materials is true and correct to the best of its mpleteness and accuracy of data in this form because it has bee ormation is often protected from disclosure as trade secrets and vided only as estimates of the average weight of these parts an dopants, metals, and non-metal materials contained within silico crochip Technology Incorporated does not provide any warranty ranties provided by Microchip Technology Incorporated and its	s knowledge and be en compiled based d some information d the average weig on devices (silicon y, express or implie s subsidiaries are c s to Material Conte	Ilief, as of the date listed in this form. Microchip Technologion the ranges provided in Material Safety Data Sheets promay not have been provided by subcontract assemblers ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declara ontained in Microchip's standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages.	gy Incorporated vided by raw m and raw materi ese estimates d tion. The exclus sale. These are irect or indirect	I cannot guara aterial supplie al suppliers. In o not include sive, limited p provided in N , consequentia	r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.21		Total Flating on external leads (pins) - Matte Tin /	100.00	1.25
ochip Technology Incorporated believes the information in this original packing materials is true and correct to the best of its pleteness and accuracy of data in this form because it has bee imation is often protected from disclosure as trade secrets and rided only as estimates of the average weight of these parts an oppants, metals, and non-metal materials contained within silico ochip Technology Incorporated does not provide any warranty anties provided by Microchip Technology Incorporated and its tations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or changer rwise, suffered by users or third parties as a result of the users	s knowledge and be en compiled based d some information d the average weig on devices (silicon y, express or implie s subsidiaries are c s to Material Conte	Ilief, as of the date listed in this form. Microchip Technologion the ranges provided in Material Safety Data Sheets promay not have been provided by subcontract assemblers ht of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declara ontained in Microchip's standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages, ditional standard terms and conditions of the conductions and shall not be liable for any damages.	gy Incorporated vided by raw m and raw materi ese estimates d tion. The exclus sale. These are irect or indirect	I cannot guara aterial supplie al suppliers. In o not include sive, limited p provided in N , consequentia	r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.21	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight	1.25

Semiconductor Device Type	e: MB 03 (Lead) SOT-(39 (A5 / AT)		nation Base A pper Alloy (C				nogeneous Materials: (e.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling e3
,		"Contained In"	% Total			28.26	(mg) Total	Mold Compound	% ot Total Weight	
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	20.20				34.50
Silica, vitreous	60676-86-0 Trade Secret	Mold Compound	46.376 3.342	24.023	463,760		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide) Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound Mold Compound	3.342	1.731	33,418 33,418		Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	6.13 6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.337	0.692	13.367		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.164	0.085	1,637		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	42.275	21.899	422,753		Garbon Black	Total		L
Iron	7439-89-6	Lead Frame	1.040	0.539	10,399	22.92	(mg) Total	Lead Frame	% of Total Weight	
Silver	7440-22-4	Lead Frame	0.843	0.437	8,430	22.52	Copper	7440-50-8	95.54	44.23
Zinc	7440-22-4	Lead Frame	0.055	0.029	553		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.037	0.019	365		Silver	7440-22-4	1.91	
Metal oxide	Trade Secret	Die Attach	0.102	0.053	1.023		Zinc	7440-66-6	0.13	
Epoxy resins	Trade Secret	Die Attach	0.102	0.053	1,023		Phosphorous	7723-14-0	0.08	
Glycol ethers	Trade Secret	Die Attach	0.078	0.040	775			Total		Ш
Curing / Hardener	Trade Secret	Die Attach	0.028	0.014	279	0.16	(mg) Total	Die Attach	% of Total Weight	
Silicon	7440-21-3	Chip (Die)	0.410	0.212	4,100	0.10	Metal oxide	Trade Secret	33	0.01
Gold	7440-57-5	Wire Bond	0.350	0.181	3,500		Epoxy resins	Trade Secret	33	
Tin		external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.120	0.062	1,200		Glycol ethers	Trade Secret	25	
100	1110 01 0 1 Huding of	TOTALS:		51.800	1.000.000		Curing / Hardener	Trade Secret	9	
pliance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemica	al substance is NOT an intent						Doped Silicon	7440-21-3	100	
is not below the threshold of regulatory concern for any regu	latory scheme world-wide.	on to believe that the unavoidable impurity conce	entration of the	chemical subs				Total	100.00	2
is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma	llatory scheme world-wide. ability standard for plastics. Y	on to believe that the unavoidable impurity conce	entration of the	chemical subs		0.18	(mg) Total	Total Wire Bond	100.00 % of Total Weight	
r, is not below the threshold of regulatory concern for any regu Iding compounds used by Microchip meet the UL94 V0 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plas p protective "tubes" in which the specific product is shipped ar	latory scheme world-wide. bility standard for plastics. Y stics/	on to believe that the unavoidable impurity conce	to obtain a test	chemical subs	stance, if	0.18	(mg) Total Doped Gold	Wire Bond 7440-57-5	% of Total Weight	0.35
I is not below the threshold of regulatory concern for any regulatory concerns any set of the specific product is shipped artain "reels" may be made from PVC plastic.	Ilatory scheme world-wide. ability standard for plastics. Y stics/ re made from polyvinyl chlori is form concerning substanc is knowledge and belief, as o en compiled based on the ra d some information may not nd the average weight of anti con devices (silicon IC) in the ty, express or implied, with re	on to believe that the unavoidable impurity conce ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to h es restricted by RoHS in Microchip Technology I the date listed in this form. Microchip Technolo nges provided in Material Safety Data Sheets pro have been provided by subcontract assemblers cipated significant toxic metals components. The finished parts.	ntration of the to obtain a test old the packing Incorporated's : gy Incorporate vided by raw m and raw materi ese estimates d	chemical subs report at slip on the ou semiconducto d cannot guara aterial supplie al suppliers. Ir o not include sive, limited pi	stance, if uter box and r devices in antee the ers. Supplier formation is trace levels roduct	0.18		Wire Bond	% of Total Weight	0.35

				ation Base A oper Alloy (C				ogeneous Materials: a.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: RC 04 (Lead) SOT	. ,		•						e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	5.69	(mg) Total	Mold Compound	% ot Total Weight	62.57
Silica, vitreous	60676-86-0	Mold Compound	53.185	4.840	531,845		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38,324		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38,324		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.533	0.139	15,330		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.188	0.017	1,877		Carbon Black	1333-86-4	0.30	
Iron	7439-89-6	Lead Frame	14.095	1.283	140,947			Total	100.00	
Nickel	7440-02-0	Lead Frame	11.071	1.007	110,712	2.40	(mg) Total	Lead Frame	% of Total Weight	26.36
Silver	7440-22-4	Lead Frame	0.502	0.046	5,022		Iron	7439-89-6	53.47	
Cobalt	7440-48-4	Lead Frame	0.264	0.024	2,636		Nickel	7440-02-0	42.00	
Manganese	7439-96-5	Lead Frame	0.211	0.019	2,109		Silver	7440-22-4	1.91	
Zinc (Metal)	7440-44-0	Lead Frame	0.132	0.012	1,318		Cobalt	7440-48-4	1.00	
Silicon	7440-21-3 7723-14-0	Lead Frame	0.079	0.007	791		Manganese	7439-96-5	0.80	
Phosphorous Silver (Ag)	7440-22-4	Lead Frame Die Attach	0.259	0.001	66 2.591		Zinc (Metal) Silicon	7440-66-6 7440-21-3	0.30	
Proprietary Resin	Trade Secret	Die Attach Die Attach	0.259	0.024	2,591		Phosphorous	7440-21-3 7723-14-0	0.03	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.001	0.000	99		Filospholous	Total	0.03 100.00	
Silicon	7440-21-3	Chip (Die)	4.290	0.390	42,900	0.03	(mg) Total	Die Attach	% of Total Weight	0.33
Gold	7440-21-3	Wire Bond	0.110	0.010	42,900	0.03		7440-22-4		0.33
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	6.340	0.577	63,400		Silver (Ag) Proprietary Resin	Trade Secret	79 19	
1111	7440-31-3 Plating 0	TOTALS:	100.000	9.100	1,000,000	Bropriotor	y Curing agent & Hardener	Trade Secret	3	
	0.0091 g To		100.000	5.100	1,000,000	Fioplietai	y curing agent & hardener	Total	100.00	
pliance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemica			, to the best of	Microchip Tec	hnology		Doped Silicon	7440-21-3 Total	100 100.00	
rporated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma	latory scheme world-wide. ability standard for plastics.				tance, if	0.01	(mg) Total	Wire Bond	% of Total Weight	0.11
://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar		nide (PVC) plastic. "Window envelopes" used to bo	old the nacking	slin on the ou	ter box and	0.01				0.11
ain "reels" may be made from PVC plastic.			na nie paelang		ioi box ana		Doped Gold	7440-57-5 Total	100 100.00	
rochip Technology Incorporated believes the information in th			ncorporated's s					Total	100.00	
ir original packing materials is true and correct to the best of it npleteness and accuracy of data in this form because it has be romation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts an lopants, metals, and non-metal materials contained within silic	en compiled based on the ind some information may not the average weight of ar	ranges provided in Material Safety Data Sheets prov ot have been provided by subcontract assemblers a nticipated significant toxic metals components. The	vided by raw m and raw materi	aterial supplie al suppliers. In	rs. Supplier formation is					
ir original packing materials is true and correct to the best of it npleteness and accuracy of data in this form because it has be romation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts as	een compiled based on the Ind some information may nu- nd the average weight of ar con devices (silicon IC) in th ty, express or implied, with	ranges provided in Material Safety Data Sheets prov ot have been provided by subcontract assemblers a nticipated significant toxic metals components. The ne finished parts. respect to the information provided in this declarat	vided by raw m and raw materia se estimates d ion. The exclus	aterial supplie al suppliers. In o not include t sive, limited pr	rs. Supplier formation is race levels oduct	0.58		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	6.34
original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets an ided only as estimates of the average weight of these parts ar opants, metals, and non-metal materials contained within silic ochip Technology Incorporated does not provide any warrant anties provided by Microchip Technology Incorporated and it	een compiled based on the in d some information may m nd the average weight of ar soon devices (silicon IC) in th ty, express or implied, with its subsidiaries are containe es to Material Content Deck	ranges provided in Material Safety Data Sheets prov ot have been provided by subcontract assemblers a tricipated significant toxic metals components. The re finished parts. respect to the information provided in this declarat d in Microchip's standard terms and conditions of s arations and shall not be liable for any damages, dii	vided by raw m and raw materia se estimates d ion. The exclus sale. These are rect or indirect.	aterial supplie al suppliers. In o not include t sive, limited pr provided in M consequentia	rs. Supplier formation is trace levels oduct icrochip's Il or	0.58		leads (pins) - Matte Tin /	% of Total Weight	6.34

ICROCHIP Semiconductor Device Typ	ne: DB 03 (Lead) SOT	-223 (F6)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markir and/or Pkg. Labeling e3
		"Contained In"	% Iotal			56.72	(mg) Total	Mold Compound	% ot Total Weight	49.02
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	50.72	(iiig) rotai		,	43.02
Silica, vitreous	60676-86-0	Mold Compound	41.667	48.209	416,670		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.201	1.390	12,010		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.147	0.170	1,471		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44.941	51.997	449,408			Total		
Iron	7439-89-6	Lead Frame	1.105	1.279	11,054	54.43	(mg) Total	Lead Frame	% of Total Weight	47.04
Silver	7440-22-4	Lead Frame	0.896	1.037	8,961		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.059	0.068	588		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.039	0.045	388		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.502	0.581	5,024		Zinc	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.118	0.137	1,184		Phosphorous	7723-14-0	0.08	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.019	0.022	192	E		Total	100.00	
Silicon	7440-21-3	Chip (Die)	1.580	1.828	15,800	0.74	(mg) Total	Die Attach	% of Total Weight	0.64
Gold	7440-57-5	Wire Bond	0.150	0.174	1.500		Silver (Aa)	7440-22-4	79	
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.570	1.816	15.700		Proprietary Resin		19	
	1 Ho of o Hading	TOTALS:		115.700	1,000,000	Proprietan	Curing agent & Hardener		3	
	- · · ·				.,,	riophetar	Coning agent & Hardener	Total	100.00	1
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	-	/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	HS Recast Direc	tive) and with	EU	1.83	Total (mg)	Chip (Die)	% of Total Weight	1.58
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via in remical substance is absent from the list above, the chemic	y with EU Directive 2002/95 ternal design controls, sup al substance is NOT an inte	/EC (RoHS Directive), EU Directive 2011/65/EU (RoH plier declarations, and /or analytical test data.	I, to the best of	Microchip Tec	hnology	1.83	Total (mg) Doped Silicon		100	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Nance with the above EU Directives has been verified via in contrated's knowledge and belief as of the date of this docum s not below the threshold of regulatory concern for any reg ng compounds used by Microchip meet the UL94 V0 flamm (ul.com/global/eng/pages/offerings/industries/chemicals/pla rotective "tubes" in which the specific product is shipped a	y with EU Directive 2002/95 ternal design controls, sup al substance is NOT an inte ent, there is no credible rea ulatory scheme world-wide ability standard for plastics stics/	/EC (RoHS Directive), EU Directive 2011/65/EU (RoH plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device and uson to believe that the unavoidable impurity concer- . You can access the UL iQTM family of databases t	I, to the best of ntration of the to obtain a test	Microchip Tec chemical subs report at	hnology tance, if	0.17		Chip (Die) 7440-21-3	100	
semiconductor device and its homogenous materials compl tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bilance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic porated's knowledge and belief as of the date of this docum s not below the threshold of regulatory concern for any reg ing compounds used by Microchip meet the UL94 V0 flamm /ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a in "reels" may be made from PVC plastic.	y with EU Directive 2002/95 ternal design controls, sup al substance is NOT an inte ent, there is no credible rea ulatory scheme world-wide ability standard for plastics stics/ re made from polyvinyl chl his form concerning substa ts knowledge and belief, as sen compiled based on the nd some information may n ind the average weight of a	VEC (RoHS Directive), EU Directive 2011/65/EU (RoH plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device and uson to believe that the unavoidable impurity concer- . You can access the UL iQTM family of databases t oride (PVC) plastic. "Window envelopes" used to he inces restricted by RoHS in Microchip Technology II of the date listed in this form. Microchip Technology II of the date listed in Material Safety Data Sheets pro- iot have been provided by subcontract assemblers a incicipated significant toxic metals components. The	I, to the best of ntration of the to obtain a test old the packing ncorporated's : gy Incorporated vided by raw m	Microchip Tec chemical subs report at slip on the ou semiconductor d cannot guara aterial suppliers. Ir	chnology tance, if iter box and r devices in intee the rs. Supplier iformation is		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.15
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bilance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic porated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any reg ing compounds used by Microchip meet the UL94 V0 flamm /ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a in "reels" may be made from PVC plastic. whip Technology Incorporated believes the information in the original packing materials is true and correct to the best of in leteness and accuracy of data in this form because it has bo mation is often protected from disclosure as trade secrets and ded only as estimates of the average weight of these parts a pants, metals, and non-metal materials contained within sill white provided by Microchip Technology Incorporated and in attions, sales order acknowledgement, and invoices.	y with EU Directive 2002/95 ternal design controls, sup al substance is NOT an inte ent, there is no credible ree ulatory scheme world-wide ability standard for plastics stics/ re made from polyvinyl chl his form concerning substa ts knowledge and belief, as een compiled based on the of some information may n ind the average weight of a con devices (silicon IC) in t ty, express or implied, with ts subsidiaries are contained	VEC (RoHS Directive), EU Directive 2011/65/EU (Roh plier declarations, and /or analytical test data. entional ingredient in the semiconductor device and uson to believe that the unavoidable impurity concer- . You can access the UL iQTM family of databases to oride (PVC) plastic. "Window envelopes" used to he inces restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technology In anges provided in Material Safety Data Sheets provided by subcontract assemblers in thicipated significant toxic metals components. The he finished parts. respect to the information provided in this declarated and in Microchip's standard terms and conditions of	I, to the best of ntration of the to obtain a test old the packing oncorporated's of gy Incorporated's gy incorporated gy incorporated set as a statistical set of the set of the sale. These are	Microchip Tec chemical subs report at slip on the ou semiconductoo d cannot guara aterial supplie al suppliers. Ir o not include sive, limited pr provided in M	thnology tance, if net box and r devices in intee the rs. Supplier formation is trace levels roduct licrochip's		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.15
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bilance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic porated's knowledge and belief as of the date of this docum s not below the threshold of regulatory concern for any reg ing compounds used by Microchip meet the UL94 V0 flamm /ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a in "reels" may be made from PVC plastic. Profiginal packing materials is true and correct to the best of if bleteness and accuracy of data in this form because it has bu mation is often protected from disclosure as trade secrets and ded only as estimates of the average weight of these parts a pants, metals, and non-metal materials contained within sills holip Technology Incorporated does not provide any warrand in this provided by Microchip Technology Incorporated and in these provided by Microchip Technology Incorporated and in the specific to the set and the set	y with EU Directive 2002/95 ternal design controls, sup al substance is NOT an inte ent, there is no credible re- ulatory scheme world-wide ability standard for plastics stics/ re made from polyvinyl chl his form concerning substa ts knowledge and belief, as sen compiled based on the d some information may n und the average weight of a con devices (silicon IC) in t ty, express or implied, with ts subsidiaries are contain es to Material Content Deci	VEC (RoHS Directive), EU Directive 2011/65/EU (Roh plier declarations, and /or analytical test data. entional ingredient in the semiconductor device and uson to believe that the unavoidable impurity concer- . You can access the UL iQTM family of databases t oride (PVC) plastic. "Window envelopes" used to he unces restricted by RoHS in Microchip Technology In the of the date listed in this form. Microchip Technology In the of the date listed in this form. Microchip Technology is on thave been provided by subcontract assemblers inticipated significant toxic metals components. The he finished parts.	I, to the best of ntration of the to obtain a test old the packing ncorporated's : gy Incorporate vided by raw m and raw materi ase estimates d tion. The exclu sale. These are irect or indirect	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial supplies. In a suppliers. In o not include i sive, limited pr provided in M , consequentia	chnology tance, if iter box and r devices in intee the rs. Supplier formation is trace levels roduct licrochip's al or	0.17	Coped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100 100.00 % of Total Weight 100 100.00	0.15

				nation Base A oper Alloy (C			•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Produc Marking and/or Pk Labeling e3
Semiconductor Device Type	e: DC 05 (Le									
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	8.71	(mg) Total	Mold Compound	% ot Total Weight	52.77
Silica, vitreous	60676-86-0	Mold Compound	44,855	7.401	448.545		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.232	0.533	32,322		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.232	0.533	32.322		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.293	0.213	12,929		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.158	0.026	1,583		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	35.148	5.799	351,482			Total	100.00	
Iron	7439-89-6	Lead Frame	0.865	0.143	8,646	6.07	(mg) Total	Lead Frame	% of Total Weight	36.79
Silver	7440-22-4	Lead Frame	0.701	0.116	7,008		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.046	0.008	460		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.030	0.005	304		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.667	0.110	6,673		Zinc	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.157	0.026	1,573		Phosphorous	7723-14-0	0.08	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.026	0.004	255			Total	100.00	I
Silicon	7440-21-3	Chip (Die)	1.030	0.170	10,300	0.14	(mg) Total	Die Attach	% of Total Weight	0.85
Gold	7440-57-5	Wire Bond	0.550	0.091	5,500	011-1	Silver (Ag)	7440-22-4	79	0.00
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	8.010	1.322	80,100		Proprietary Resin	Trade Secret	19	
101	1440 01 0	TOTALS:	100.000	16.500	1,000,000	Proprietar	y Curing agent & Hardener		3	
	0.0405	g Total Mass		10.000	.,,	riopriciai	y ouring agent & hardener	Total	÷	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ternal design contro	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs				0.17	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	1.03
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume	ternal design contro al substance is NOT ent, there is no cred	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH 2003/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS 2003/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Directiv	to the best of	Microchip Teo	chnology	0.17	,	7440-21-3	100	1.03
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ing compounds used by Microchip meet the UL94 V0 flamma	ternal design contro al substance is NOT ant, there is no cred llatory scheme worl ubility standard for p	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concen d-wide.	to the best of tration of the e	Microchip Teo chemical subs	chnology	0.17	,	7440-21-3	100	0.55
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ing compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar	ternal design contro al substance is NOT ent, there is no cred llatory scheme worl ability standard for p stics/	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concen d-wide. plastics. You can access the UL iQTM family of databases to	to the best of tration of the o obtain a test	Microchip Teo chemical subs report at	chnology stance, if		Doped Silicon	7440-21-3 Total	100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ing compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar	ternal design contro al substance is NOT ent, there is no cred llatory scheme worl ability standard for p stics/	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concen d-wide. plastics. You can access the UL iQTM family of databases to	to the best of tration of the o obtain a test	Microchip Teo chemical subs report at	chnology stance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
semiconductor device and its homogenous materials comply ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified via int themical substance is absent from the list above, the chemical rporated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar an "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in th original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets an ided only as estimates of the average weight of these parts a oppants, metals, and non-metal materials contained within silic	ternal design contro al substance is NOT ant, there is no cred latory scheme worl ability standard for p stics/ re made from polyvi is form concerning is knowledge and b en compiled based id some informatior at the average weig	2002/95/EC (ROHS Directive), EU Directive 2011/65/EU (ROH 2002/95/EC (ROHS Directive), EU Directive 2011/65/EU (ROH 2002/95/EC (ROHS Directive), and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concend d-wide. plastics. You can access the UL iQTM family of databases to inyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by ROHS in Microchip Technology In alief, as of the date listed in this form. Microchip Technology In alief, as of the date listed in this form. Microchip Technology In any not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. These	to the best of tration of the o obtain a test ld the packing corporated's s y Incorporated ided by raw m nd raw materii	Microchip Tec chemical subs report at slip on the ou semiconducto I cannot guara aterial suppliers. Ir	chnology stance, if uter box and r devices in antee the ers. Supplier formation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight 100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in th original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets an ided only as estimates of the average weight of these parts an	ternal design contro al substance is NOT ent, there is no cred latory scheme worl ubility standard for p stics/ re made from polyvi is form concerning is knowledge and b en compiled based d some informatior nd the average weig con devices (silicon ty, express or implie	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH 2002/95/EC (RoHS Directive), and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concend d-wide. olastics. You can access the UL iQTM family of databases to inyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov inway not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. These IC) in the finished parts.	to the best of tration of the o obtain a test ld the packing corporated's s y Incorporated ided by raw m af raw materi- se estimates d on. The exclusion	Microchip Tec chemical subs report at slip on the ou semiconducto I cannot guara aterial suppliers. Ir o not include sive, limited pi	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemica porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ling compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in th original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets an ided only as estimates of the average weight of these parts an opants, metals, and non-metal materials contained within silic ochip Technology Incorporated does not provide any warrant anties provided by Microchip Technology Incorporated and it	ternal design contro al substance is NOT ent, there is no cred latory scheme worf ability standard for p stics/ re made from polyvi is form concerning is knowledge and bu en compiled based d some information and the average weig con devices (silicon ity, express or implie is subsidiaries are c es to Material Conte	2002/95/EC (ROHS Directive), EU Directive 2011/65/EU (ROH Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ible reason to believe that the unavoidable impurity concend d-wide. plastics. You can access the UL iQTM family of databases to inyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by ROHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov in may not have been provided by subcontract assemblers a pht of anticipated significant toxic metals components. Thes IC) in the finished parts. ed, with respect to the information provided in this declaration ontained in Microchip's standard terms and conditions of s nt Declarations and shall not be liable for any damages, dir	to the best of tration of the o obtain a test Id the packing corporated's s y Incorporated ided by raw m nd raw materi- se estimates d on. The exclus ale. These are ect or indirect	Microchip Tec chemical subs report at slip on the ou semiconducto I cannot guara aterial supplie al suppliers. Ir o not include sive, limited pi provided in N consequentia	chnology stance, if uter box and antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.09	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.55

		1007		ation Base A oper Alloy (C			•	ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Product Markin and/or Pkg. Labeling
Semiconductor Device Typ	e: OS 05 (Lead	"Contained In"	% Total	1						e3
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	7.99	(mg) Total	Mold Compound	% ot Total Weight	62.42
Silica, vitreous	60676-86-0	Mold Compound	53.057	6.791	530.570		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound Mold Compound	3.823	0.489	38,232		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound Mold Compound	3.823	0.489	38,232		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.529	0.196	15,293		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.187	0.024	1,873		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	25.585	3.275	255,849		j .	Total	100.00	,
Iron	7439-89-6	Lead Frame	0.629	0.081	6,293	3.43	(mg) Total	Lead Frame	% of Total Weight	26.78
Silver	7440-22-4	Lead Frame	0.510	0.065	5,102		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.033	0.004	335		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.022	0.003	221		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	1.531	0.196	15,308		Zinc	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.361	0.046	3,608		Phosphorous	7723-14-0	0.08	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.059	0.007	585			Total	100.00	
Silicon	7440-21-3	Chip (Die)	5.340	0.684	53,400	0.25	(mg) Total	Die Attach	% of Total Weight	1.95
Gold	7440-57-5	Wire Bond	0.400	0.051	4,000		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.110	0.398	31,100		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	12.800	1,000,000	Proprietar	y Curing agent & Hardener	Trade Secret	3	
	0.0128 g	Total Mass						Total	100.00	
	ernal design controls	supplier declarations, and /or analytical test data.		·	vith EU	0.68	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	5.34
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic roprorated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu	al substance is NOT an ent, there is no credib	n intentional ingredient in the semiconductor device a le reason to believe that the unavoidable impurity con			Technology	0.68				5.34
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic- prorated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a	al substance is NOT a ent, there is no credib llatory scheme world- ibility standard for pla stics/	n intentional ingredient in the semiconductor device a le reason to believe that the unavoidable impurity con wide. stics. You can access the UL iQTM family of database	centration of t s to obtain a te	he chemical s est report at	Technology ubstance, if	0.68		7440-21-3	100	0.4
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemica prorated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/pla	al substance is NOT a ent, there is no credib llatory scheme world- ibility standard for pla stics/	n intentional ingredient in the semiconductor device a le reason to believe that the unavoidable impurity con wide. stics. You can access the UL iQTM family of database	centration of t s to obtain a te	he chemical s est report at	Technology ubstance, if		(mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic- prorated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a	al substance is NOT are ent, there is no credib latory scheme world- bility standard for pla- stics/ re made from polyviny is form concerning su fits knowledge and b s been compiled base excrets and some infor f these parts and the a	n intentional ingredient in the semiconductor device a le reason to believe that the unavoidable impurity con wide. stics. You can access the UL iQTM family of database I chloride (PVC) plastic. "Window envelopes" used to bstances restricted by RoHS in Microchip Technolog elief, as of the date listed in this form. Microchip Tech d on the ranges provided in Material Safety Data She mation may not have been provided by subcontract a average weight of anticipated significant toxic metals	centration of t s to obtain a te hold the pack y Incorporated nology Incorp ets provided by ssemblers and	he chemical s est report at ing slip on the 's semicondu orated cannot y raw material d raw material	Technology substance, if e outer box ctor devices guarantee suppliers. suppliers.		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this docum , is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in the reir original packing materials is true and correct to the best of completeness and accuracy of data in this form because it has plier information is often protected from disclosure as trade as plier information is provided only as estimates of the average weight of	al substance is NOT ar ent, there is no credib Jlatory scheme world- ibility standard for pla- stics/ re made from polyviny is form concerning su for its knowledge and b s been compiled base secrets and some infor f these parts and the a contained within silico ty, express or implied, is subsidiaries are cor	n intentional ingredient in the semiconductor device a le reason to believe that the unavoidable impurity con wide. stics. You can access the UL iQTM family of database I chloride (PVC) plastic. "Window envelopes" used to bistances restricted by RoHS in Microchip Technolog elief, as of the date listed in this form. Microchip Tech d on the ranges provided in Material Safety Data She mation may not have been provided by subcontract a average weight of anticipated significant toxic metals n devices (silicon IC) in the finished parts.	centration of t s to obtain a te hold the pack y Incorporated nology Incorp ets provided by issemblers and components. T	he chemical s est report at ing slip on the 's semicondu orated cannot y raw material d raw material Chese estimate	Technology ubstance, if e outer box ctor devices guarantee suppliers. es do not d product		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic. "cochip Technology Incorporated believes the information in the rof original packing materials is true and correct to the best completeness and accuracy of data in this form because it ha plier information is often protected from disclosure as trade s rmation is provided only as estimates of the average weight o ude trace levels of dopants, metals, and non-metal materials of rochip Technology Incorporated does not provide any warran ranties provided by Microchip Technology Incorporated and in the	al substance is NOT are ent, there is no credib ulatory scheme world- ibility standard for plas stics/ re made from polyviny is form concerning su of its knowledge and b s been compiled base ecrets and some infor f these parts and the a contained within silico ty, express or implied, is subsidiaries are con- ces.	n intentional ingredient in the semiconductor device a le reason to believe that the unavoidable impurity con wide. stics. You can access the UL iQTM family of database I chloride (PVC) plastic. "Window envelopes" used to bistances restricted by RoHS in Microchip Technolog elief, as of the date listed in this form. Microchip Tech d on the ranges provided in Material Safety Data She mation may not have been provided by subcontract a average weight of anticipated significant toxic metals in devices (silicon IC) in the finished parts. with respect to the information provided in this decla tained in Microchip's standard terms and conditions Declarations and shall not be liable for any damages,	centration of t s to obtain a te hold the pack y Incorporated nology Incorp ets provided by issemblers and components. T iration. The exi of sale. These direct or indir	he chemical s est report at ing slip on the 's semicondu orated cannot y raw material These estimate clusive, limite are provided ect, conseque	Technology ubstance, if e outer box ctor devices suppliers. es do not d product in ential or	0.05	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100 100.00 % of Total Weight 100 100.00	0.4
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/pla- protective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic. The provided only as estimates of the average weight o de trace levels of dopants, metals, and non-metal materials of cochip Technology Incorporated does not provide any warran anties provided by Microchip Technology Incorporated and in provided by Microchip Technology Incorporated and in ochip's quotations, sales order acknowledgement, and invoid pochip's quotations, sales order acknowledgement, and invoid provide say duty to notify users of updates or chang wise, suffered by users or third parties as a result of the use	al substance is NOT are ent, there is no credib ulatory scheme world- ibility standard for plas stics/ re made from polyviny is form concerning su of its knowledge and b s been compiled base ecrets and some infor f these parts and the a contained within silico ty, express or implied, is subsidiaries are con- ces.	n intentional ingredient in the semiconductor device a le reason to believe that the unavoidable impurity con wide. stics. You can access the UL iQTM family of database I chloride (PVC) plastic. "Window envelopes" used to bistances restricted by RoHS in Microchip Technolog elief, as of the date listed in this form. Microchip Tech d on the ranges provided in Material Safety Data She mation may not have been provided by subcontract a average weight of anticipated significant toxic metals in devices (silicon IC) in the finished parts. with respect to the information provided in this decla tained in Microchip's standard terms and conditions Declarations and shall not be liable for any damages,	centration of t s to obtain a te hold the pack y Incorporated nology Incorp ets provided by issemblers and components. T iration. The exi of sale. These direct or indir	he chemical s est report at ing slip on the 's semicondu orated cannot y raw material These estimate clusive, limite are provided ect, conseque	Technology ubstance, if e outer box ctor devices suppliers. es do not d product in ential or	0.05	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00	0.4

Silica, vitreous 60676-86-0 Mold Compound 67.830 3.731 678 Epoxy Resin (No bromine, No diantimony trioxide) Trade Secret Mold Compound 4.888 0.269 48, Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Trade Secret Mold Compound 4.888 0.269 48, Epoxy, Cresol Novolac 29690-82-2 Mold Compound 1.955 0.108 19,	4.39			ys)	Product Markin and/or Pkg. Labeling e3
Silica, vitreous 60676-86-0 Mold Compound 67.830 3.731 678 Epoxy Resin (No bromine, No diantimony trioxide) Trade Secret Mold Compound 4.888 0.269 48, Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Trade Secret Mold Compound 4.888 0.269 48, Epoxy, Cresol Novolac 29690-82-2 Mold Compound 1.955 0.108 19,	pin	(mg) Total	Mold Compound	% ot Total Weight	37.38
Epoxy Resin (No bromine, No diantimony trioxide) Trade Secret Mold Compound 4.888 0.269 48, Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Trade Secret Mold Compound 4.888 0.269 48, Puenolic Resin (No Br / CL SbO3, No diantimony trioxide) Trade Secret Mold Compound 4.888 0.269 48, Depoxy, Cresol Novolac 29690-82-2 Mold Compound 1.955 0.108 19,	9 200	Silica, vitreous	60676-86-0	85.00	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Trade Secret Mold Compound 4.888 0.269 48, Epoxy, Cresol Novolac 29690-82-2 Mold Compound 1.955 0.108 19,	3.878	Epoxy Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac 29690-82-2 Mold Compound 1.955 0.108 19,	3,878	Phenolic Resin	Trade Secret	6.13	
Carbon Black 1333-86-4 Mold Compound 0,239 0,013 2.3	9,551	Epoxy, Cresol Novolac	29690-82-2	2.45	
	,394	Carbon Black	1333-86-4	0.30	
	2,209		Total	100.00	
	,468 0.58	(mg) Total	Lead Frame	% of Total Weight	5.68
	131	Copper	7440-50-8	97.34	
	87	Iron	1309-37-1	2.35	
	84	Zinc	7440-66-6	0.13 0.08	
	<u>11</u> 11	Phosphate Silver	7723-14-0 7440-22-4	0.08	
	1	Chromium	7440-22-4	0.08	
	.888	Lead	7439-92-1	0.01	
	.388	Cadmium	7440-43-9	0.00	
	225		Total	100.00	
	5,000 0.04	(mg) Total	Die Attach	% of Total Weight	0.51
Gold 7440-57-5 Wire Bond 0.200 0.011 2.0	,000	Silver (Ag)	7440-22-4	79	
	2,500	Proprietary Resin	Trade Secret	19	
TOTALS: 100.000 5.500 1,00	00,000 Proprieta	ry Curing agent & Hardener	Trade Secret	3	
0.0058 g Total Mass			Total	100.00	
pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Techno rporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance		Doped Silicon	7440-21-3 Total	100 100.00	
r, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Iding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at b://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/	0.01	(mg) Total	Wire Bond	% of Total Weight	3
protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer I			Total	100-00	
d certain "reels" may be made from PVC plastic.			- Otal		
e protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer l d certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor de their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarar o completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material supplic pplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material supplic ormation is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do no dude trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.	intee iers. iers.				
d certain "reels" may be made from PVC plastic. prochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor den- heir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarar completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material supplic polier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material supplic pormation is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not	Intee iers. iers. not	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	52.92
certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor de- ier original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarar completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material supplie plier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material supplie rmation is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not ade trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. ochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited produrantes provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in these provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in the subsidiaries provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in the subsidiaries provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in the subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in	ntee iers. iers. not uuct 0.07		Plating on external leads (pins) - Matte Tin / annealed at 150°C for	% of Total Weight 100.00 100.00	52.92

No. Contained fm ⁺ % 10al major 114.11 (mg) Table Mode Composed % at Table Weight 56.77 Siles, citesca 607/8-60 Mode Composed 43.276 69.39 42.745 100.9		e: TO and ZB (13 (Lead) TO-92 (A2 / AU)		ation Base A oper Alloy (C				ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
$\frac{1}{160} \frac{1}{160} \frac{1}$			"Contained In"				114.11	(mg) Total	Mold Compound	% ot Total Weight	
Enclose Product Ream (Net North Statute) Table Statute Mod Compound 3.477 6.898 34.777 Column Statute Statute <th></th> <th></th> <th>•</th> <th>•</th> <th></th> <th></th> <th></th> <th></th> <th>•</th> <th>•</th> <th></th>			•	•					•	•	
Physical Beam Mole 7C (5, 2003). No diaminmy tracking Track State Mole Compound 3,477 6,988 3,477 6,988 3,477 6,988 3,477 6,988 3,477 6,988 3,477 6,988 3,477 6,988 3,477 6,988 3,477 6,988 5,477 5,508 5,50 5,508 </td <th></th> <td></td>											
Encor, Creat Notation 13380 2706 13380 Encor, Creat Notation 13380 Encor, Creat Notation 13380 Control Notation 13380											
Carson Black 1338-84 Model Compound 0.770 0.782 1.703 Constr 1400 Compound 0.776 0.782 1.703 0.782 1.703 Constr 7440 556 Lash Finine 0.776 153.04 7.203 0.800 (mg) constr 0.766 <th></th> <td></td>											
Cope 7460-06 Lead Frame 0.802.47 6.62 380.230 (min Total Total 100.07 Start 7.458.866 Lead Frame 0.078 1.580 8.00 (min) 4.850.86 1.850 9.00 (min) 1.850.97 (min) 1.850.97 1.850.97 (min) (min) 1.850.97 (min) 1.850.97 (min) 1.850.97											
$ \frac{\ln n}{164} = \frac{1938}{164} \frac{1}{164} \frac{1}{1$								Carbon Black			
Sher 7440224 Lead Frame 0.758 1.524 7.520 7.464 0.64 0.654 Phositrorus 7723 14.4 Load Frame 0.053 0.052 226 101 152 101 <td< td=""><th></th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>											
$ \frac{2 \text{ Inc} }{2 \text{ Model} 0 \text{ Model} 0$							80.00	(mg) Total			39.8
Proceedings772:14.0Leat Prane0.0330.0680.3840.0680.384Silve7440:2241.010.0240.0310.0050.0111070.0000.001107100.00Hour phone higher of the proceeding of the p								Copper		95.54	
Shear 7440-22-4 Die Attach 0.066 0.154 664 Expony Reen 3003-85 Die Attach 0.017 0.018 664 1.6004 pleint lycickli nem 3003-85 Die Attach 0.001 57 Die Attach 0.000 0.001 57 Burd enlages and statut 112-07-7 Die Attach 0.001 0.001 7 0 Attach 0.002 723-14.0 0.003 0.001 3 0.18 Gins 7 740-315 1000 1000 1.003 1.000 100-1 7 0 Attach 0.020 0.021 7 0 Attach 0.020 0.021 7 0 Attach 0.020 100-0 1.000											
Epop Neam 9003-36.5 Die Attach 0.017 0.034 1697 Proughnous 772-14.0 0.08 Budy (phend) (givit) efter 9003-36.5 Die Attach 0.006 0.011 67 Total 000 Phenolic hundering 92-86.5 Die Attach 0.001 0.011 3 0.11 (mg) Total Die Attach % of Total Weight 0.09 Bigit phend (givit) efter 97.001 0.010 0.011 0.011 7.01 See 7.402.15 10 Bigit phend (givit) efter 0.021 0.011 0.010 0.011 0.010 0.010 0.010 0.010 10.000 20.001 10.0000 20.001 10.0000 0.010 10.0000 0.010 0.010 0.010 0.010 10.0000 20.001 10.0000 0.010 0.000 0.000 0.000 10.0000 0.000 10.0000 10.0000 0.000 10.000 10.000 0.000 10.000 10.000 10.000 10.000 10.000 10.000 10.000<								Silver			
1-Bull planning typicady enter 3101-80-8 Die Attach 0.006 0.011 67 Total 100.00 Buld planning typicady enter 328.86 Die Attach 0.000 3.0.18 (mg) Total Die Attach 0.000 3.0.18 (mg) Total Die Attach 0.000 0.001 7.0.18 (mg) Total Die Attach 0.000 0.001 7.0.18 (mg) Total Die Attach 7.0.16 0.000 0.001 7.0.18 (mg) Total Die Attach 7.0.16 0.000 0.000 7.0.18 (mg) Total Die Attach 7.0.18 0.000 7.0.18 (mg) Total Die Attach 7.0.18 0.000 7.0.18 (mg) Total 0.001 7.0.18 (mg) Total 0.001 0.000 1.00.000	Silver	7440-22-4	Die Attach	0.066	0.134			Zinc	7440-66-6	0.13	
PhoneInclination 92-88-6 Die Atlich 0.000 0.011 3 0.19 (mg) Total Die Atlich 0.09 Bildon 7440-21-2 Die Atlich 0.001 7 0 0 7440-22-4 74 74 Old 7440-21-3 Die Atlich 0.001 7 0 0 7440-22-4 74 74 Old 7440-21-3 Die Atlich 0.001 7 0.001 7 0 </td <th></th> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Phosphorous</td> <td>7723-14-0</td> <td>0.08</td> <td></td>								Phosphorous	7723-14-0	0.08	
Butyl celloadve acetate 112-07-2 Die Attach 0.001 7 Billoom 7440-21-3 Chip (Die) 0.800 1.608 8.000 Geid 7440-21-3 Chip (Die) 0.800 1.608 8.000 Tim 7440-21-3 Plang on estemal leads ping- Mate Tin / Provide Strate Str	t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.006	0.011	57			Total	100.00	
Silteon 7440-21-3 Chip (Die) 0.800 1.608 8.000 Gold 7440-21-3 Wire Bord 0.040 0.080 <th>Phenolic hardener</th> <td>92-88-6</td> <td>Die Attach</td> <td>0.000</td> <td>0.001</td> <td>3</td> <td>0.18</td> <td>(mg) Total</td> <td>Die Attach</td> <td>% of Total Weight</td> <td>0.09</td>	Phenolic hardener	92-88-6	Die Attach	0.000	0.001	3	0.18	(mg) Total	Die Attach	% of Total Weight	0.09
Silteon 7440-21-3 Chip (Die) 0.800 1.608 8.000 Gold 7440-21-3 Wire Bord 0.040 0.080 <th></th> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>					1						
Gold 7440575 Write Bond 0.040 0.080 400 Tin 7440575 Itege on estimate lass [prim]. Matte The arresided at [SIC to 1 hose 2 50.00 25.000 1.000.000 201.000 1.000.000 201.000 1.000.000	Butyl cellosolve acetate	112-07-2	Die Attach	0.001	0.001	7		Silver	7440-22-4	74	
Gold 7440575 Wree Bond 0.040 0.080 4400 Tin 7440575 Pregro neemalastace (res). Must Thi ravested at SIC for 1 Nov. 2 (20) 52,000 1,000,000 201,0000 1,000,000 201,000 <th>Silicon</th> <td>7440-21-3</td> <td>Chip (Die)</td> <td>0.800</td> <td>1.608</td> <td>8,000</td> <td></td> <td>Epoxy Resin</td> <td>9003-36-5</td> <td>19</td> <td></td>	Silicon	7440-21-3	Chip (Die)	0.800	1.608	8,000		Epoxy Resin	9003-36-5	19	
Tin 7440-315 Plance one event leads (pre): Mathe Tin Jamoséd at 190° (por 1 Nat. 2500 5.023 29,000 Previde liademer Previde liademer Previde liademer 92,000 Total T	Gold	7440-57-5	Wire Bond	0.040	0.080	400				6	
Output TOTALS: 100.000 201.000 1.000.000 semiconductor device and its homogenous materials comply with EU Directive 2002/SEC (RoHS Directive), EU Directive 2017/65/EU (RoHS Recast Directive) and with EU 1.61 Total 100.00 semiconductor device and its homogenous materials comply with EU Directive 2002/SEC (RoHS Directive), EU Directive 2017/65/EU (RoHS Recast Directive) and with EU 1.61 Total 0.00 splance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 1.61 Total 0.00 reported's famolygapacolifering/pages/offering/page	Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2,500	5.025	25.000			92-88-6	0	
0.2010 g Total Mass Total Total<										1	
semiconductor device and its homogenous materials comply with EU Directive 2002/35/EC (End-d-Like Vehicles (ELV) Directive). Justice 2002/35/EC (End-d-Like Vehicles (ELV) Directive). Total (mg) Chip (Die) % of Total Weight 0.8 Doped Silicon 7440-21-3 100 Total 100.00 Total 100		0 2010				.,,		Barr concorre acetato		100.00	
ding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at 0.08 (mg) Total Wire Bond % of Total Weight 0.04 //ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ 0.08 (mg) Total Wire Bond % of Total Weight 0.04 //ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ Doped Goid 7440-57-5 100 100.00 ordplane to the weard of the weard of the best of its knowledge and belief, as of the date listed in this form. Concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in roliginal packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the pleteness and accuracy of data in this form because it has been compiled based on the ranges provided by Microchiract assemblers and raw material suppliers. Information is form disclosure as trade secrets and some information may not have been provided by Microchiract assemblers. Information is form concerning substances (silicon IC) in the finished parts. orochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and contract semilations of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. Plaing on external leads (pins) · Matter Tin / artification and shall not be liable for any damages, direct or indirect, consequential or myvide, unifreched by users of turb arters as a result of the	mpliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica	al substance is NOT a	an intentional ingredient in the semiconductor device and,					Doped Silicon			
ain "reels" may be made from PVC plastic. Total 100.00 Total 100.00	olding compounds used by Microchip meet the UL94 V0 flamma tp://ul.com/global/eng/pages/offerings/industries/chemicals/plas	ability standard for pl stics/	astics. You can access the UL iQTM family of databases to		·		0.08	(mg) Total	Wire Bond	% of Total Weight	0.04
The procent of the characteristic of the deversion of the	rtain "reels" may be made from PVC plastic.	e made from polyvin	iyi chloride (PVC) plastic. "Window envelopes" used to ho	old the packing	slip on the ou	uter box and		Doped Gold			
Open precinition gy incorporated does not provide any warranty, express or implied, with respect to the information provide in this declaration. The exclusive, initial product 5.03 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 % of Total Weight 2.5 ranties provided by Microporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's 5.03 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 % of Total Weight 2.5 ranties provided by Microporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's 5.03 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 % of Total Weight 2.5 rochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or erwise, suffered by users or third party test reports (SGS) or is Certificate of Compliance for semiconductor products. Tin 7440-31-5 100.00									Total	100.00	
erwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5 100.00	eir original packing materials is true and correct to the best of it impleteness and accuracy of data in this form because it has be formation is often protected from disclosure as trade secrets an ovided only as estimates of the average weight of these parts a	es knowledge and bel een compiled based o nd some information nd the average weigh	lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	y Incorporated vided by raw m and raw materi	l cannot guara aterial supplie al suppliers. Ir	antee the ers. Supplier nformation is					
Total 100.00	eir original packing materials is true and correct to the best of it impleteness and accuracy of data in this form because it has be formation is often protected from disclosure as trade secrets an ovided only as estimates of the average weight of these parts ar dopants, metals, and non-metal materials contained within silic crochip Technology Incorporated does not provide any warrant	is knowledge and bel een compiled based of id some information nd the average weigh con devices (silicon li ty, express or implied	lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarat	y Incorporated vided by raw m and raw materi se estimates d ion. The exclusion	l cannot guara aterial supplie al suppliers. Ir o not include sive, limited p	antee the ers. Supplier nformation is trace levels roduct	5.03		leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	2.5
	eir original packing materials is true and correct to the best of it mpleteness and accuracy of data in this form because it has be- ormation is often protected from disclosure as trade secrets an ovided only as estimates of the average weight of these parts and dopants, metals, and non-metal materials contained within silic crochip Technology Incorporated does not provide any warrant irrantices provided by Microchip Technology Incorporated and it otations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or change	is knowledge and bel en compiled based o ad some information ind the average weigt con devices (silicon I ty, express or implied is subsidiaries are co es to Material Conter	lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarati initianed in Microchip's standard terms and conditions of s at Declarations and shall not be liable for any damages, dir	y Incorporated rided by raw m and raw materi se estimates d ion. The exclus- sale. These are rect or indirect	I cannot guara aterial suppliers. Ir o not include sive, limited pr provided in N	antee the ers. Supplier nformation is trace levels roduct licrochip's al or	5.03		leads (pins) - Matte Tin / annealed at 150°C for 1 hour		2.5

Semiconductor Device Typ	e: LT 05 (Lead) SC-7() (B4/BZ)		nation Base A pper Alloy (C				ogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Iotal			2.59	(mg) Total	Mold Compound	% ot Total Weight	41.18
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	2.35				41.10
Silica, vitreous	60676-86-0	Mold Compound	35.003	2.205	350,030		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.522	0.159	25,223		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.522	0.159	25,223		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.009	0.064	10,089		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.124	0.008	1,235		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	6.630	0.418	66,303			Total	100.00	
Iron	7439-89-6	Lead Frame	0.163	0.010	1,631	0.44	(mg) Total	Lead Frame	% of Total Weight	6.94
Silver	7440-22-4	Lead Frame	0.132	0.008	1,322		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.009	0.001	87		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.006	0.000	57		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.793	0.050	7,929		Zinc	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.187	0.012	1,869		Phosphorous	7723-14-0	0.08	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.030	0.002	303			Total	100.00	
Silicon	7440-21-3	Chip (Die)	1.410	0.089	14,100	0.06	(mg) Total	Die Attach	% of Total Weight	1.01
Gold	7440-57-5	Wire Bond	0.930	0.059	9,300		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5 Plating or	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	48.530	3.057	485,300		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	6.300	1,000,000	Proprieta	y Curing agent & Hardener	Trade Secret	3	
	0.0063 g Tot	al Mass						Total	100.00	•
	ternal design controls supp	EC (RoHS Directive), EU Directive 2011/65/EU (RoH	15 Recast Direc	ctive) and with	EU	0.09	Total (mg)	Chip (Die)	% of Total Weight	1.41
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic rporated's knowledge and belief as of the date of this docum	al substance is NOT an inten	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and	l, to the best of	Microchip Teo	hnology	0.09	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	1.41
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic roporated's knowledge and belief as of the date of this docum , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamm: .//ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a	al substance is NOT an inten ent, there is no credible reas ilatory scheme world-wide. ability standard for plastics. stics/	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and on to believe that the unavoidable impurity conce You can access the UL iQTM family of databases t	l, to the best of ntration of the to obtain a test	Microchip Tec chemical subs report at	hnology tance, if	0.09	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.93
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic rporated's knowledge and belief as of the date of this docum , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/pla	al substance is NOT an inten ent, there is no credible reas llatory scheme world-wide. ability standard for plastics. stics/ re made from polyvinyl chlo	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and on to believe that the unavoidable impurity conce You can access the UL iQTM family of databases t ride (PVC) plastic. "Window envelopes" used to h	I, to the best of ntration of the to obtain a test old the packing	Microchip Tee chemical subs report at slip on the ou	hnology tance, if ter box and		Doped Silicon	7440-21-3 Total	100 100.00	
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic proprated's knowledge and belief as of the date of this docum , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a ain "reels" may be made from PVC plastic. rrochip Technology Incorporated believes the information in th r original packing materials is true and correct to the best of i spleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets ar <i>vided</i> only as estimates of the average weight of these parts a opants, metals, and non-metal materials contained within sili	al substance is NOT an inten- ent, there is no credible reas- ilatory scheme world-wide. ability standard for plastics. stics/ re made from polyvinyl chlou- his form concerning substan is knowledge and belief, as of ten compiled based on the ra- ten dome information may no nd the average weight of an con devices (silicon IC) in th	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and on to believe that the unavoidable impurity conce You can access the UL iQTM family of databases t ride (PVC) plastic. "Window envelopes" used to he ces restricted by RoHS in Microchip Technology I of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets pro thave been provided by subcontract assemblers ticipated significant toxic metals components. The e finished parts.	I, to the best of ntration of the to obtain a test old the packing ncorporated's : gy Incorporated vided by raw m and raw matent ase estimates d	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial suppliers. I al suppliers. Io not include	hnology tance, if ter box and r devices in ntee the rs. Supplier formation is trace levels		Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external	100 100.00 % of Total Weight 100	
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemical roporated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in th r original packing materials is true and correct to the best of i pleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets ar vided only as estimates of the average weight of these parts a opants, metals, and non-metal materials contained within silf rochip Technology Incorporated does not provide any warran ranties provided by Microchip Technology Incorporated and i tations, sales order acknowledgement, and invoices.	al substance is NOT an inter- ment, there is no credible reas- ulatory scheme world-wide. ability standard for plastics. stics/ re made from polyvinyl chlor is form concerning substan is knowledge and belief, as of ener compiled based on the ra d some information may no nd the average weight of am on devices (silicon IC) in th ty, express or implied, with r is subsidiaries are contained	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and on to believe that the unavoidable impurity conce You can access the UL iQTM family of databases t ride (PVC) plastic. "Window envelopes" used to he ces restricted by RoHS in Microchip Technology I of the date listed in this form. Microchip Technology I that been provided by subcontract assemblers ticipated significant toxic metals components. The e finished parts. respect to the information provided in this declara in Microchip's standard terms and conditions of	I, to the best of ntration of the to obtain a test old the packing ncorporated's : gy Incorporate vided by raw m and raw materi ase estimates d tion. The exclu sale. These are	Microchip Tec chemical subs report at semiconducto d cannot guare laterial suppliers. Ir lo not include sive, limited pi provided in M	hnology tance, if r devices in ntee the rs. Supplier formation is rrace levels oduct icrochip's		Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100	
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma: //ul.com/global/eng/pages/offerings/industries/chemicals/pla protective "tubes" in which the specific product is shipped a ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in th roriginal packing materials is true and correct to the best of i pleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts a opants, metals, and non-metal materials contained within silii ochip Technology Incorporated does not provide any warran ranties provided by Microchip Technology Incorporated and i	al substance is NOT an inten ent, there is no credible reas latory scheme world-wide. ability standard for plastics. stics/ re made from polyvinyl chlo his form concerning substan is knowledge and belief, as of ene compiled based on the r d some information may no nd the average weight of an con devices (silicon IC) in th ty, express or implied, with r is subsidiaries are contained es to Material Content Decla	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and on to believe that the unavoidable impurity conce You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to he ces restricted by RoHS in Microchip Technology I of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets pro- ticpated significant toxic metals components. The e finished parts. respect to the information provided in this declara d in Microchip's standard terms and conditions of rations and shall not be liable for any damages, di	I, to the best of ntration of the to obtain a test old the packing ncorporated's : gy Incorporated's : gy Incorporated vided by raw m and raw mate ase estimates d tion. The exclu- sale. These are irect or indirect	Microchip Tec chemical subs report at semiconducto d cannot guara aterial suppliers. I al suppliers. I o not include sive, limited pi provided in M	hnology tance, if ter box and r devices in ntee the rs. Supplier iformation is irace levels oduct icrochip's al or	0.06	Doped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.93

LT 5 SC-70

Semiconductor Device Type:	LT or LTY 05 (Lead) SC	-70 NiPdAu (8A)		ination Base / opper Alloy (C			•	ogeneous Materials: .g. pc boards, display	vs)	JEDEC 97 Product Markin and/or Pkg. Labeling e4
		"Contained In"	% Total			3.94	(mg) Total	Mold Compound	% ot Total Weight	62.53
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.01	(b ,			02.00
Silica, vitreous Epoxy Resin	60676-86-0 Trade Secret	Mold Compound Mold Compound	53.151 3.830	3.348 0.241	531,505 38,300		Silica, vitreous Epoxy Resin	60676-86-0 Trade Secret	85.00 6.13	
Phenolic Resin	Trade Secret	Mold Compound Mold Compound	3.830	0.241	38,300		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.532	0.097	15.320		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.188	0.012	1,876		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	24.821	1.564	248,212			Total	100.00	
Iron	7439-89-6	Lead Frame	0.587	0.037	5,867	1.61	(mg) Total	Lead Frame	% of Total Weight	25.51
Phosphorous	7723-14-0	Lead Frame	0.064	0.004	638		Copper	7440-50-8	97.30	
Zinc (Metal)	7440-66-0	Lead Frame	0.038	0.002	383		Iron	7439-89-6	2.30	
Aluminum oxide	1344-28-1	Die Attach	0.601	0.038	6,012	1	Phosphorous	7723-14-0	0.25	
Diethylene glycol monoethyl ether acetate	112-15-2	Die Attach	0.601	0.038	6,012		Zinc (Metal)	7440-66-0	0.15	
Epoxy resin	Trade Secret - 10114	Die Attach	0.328	0.021	3,279			Total	100.00	
Epoxy resin	Trade Secret - 10105	Die Attach	0.164	0.010	1,640	0.11	(mg) Total	Die Attach	% of Total Weight	1.76
Amine	Trade Secret - 10039	Die Attach	0.066	0.004	656		Aluminum oxide	1344-28-1	34	
Silicon	7440-21-3	Chip (Die)	7.520	0.474	75,200	Diethylene gl	ycol monoethyl ether acetate	112-15-2	34	
Gold	7440-57-5	Wire Bond	1.430	0.090	14,300		Epoxy resin	Trade Secret - 10114	19	
Nickel	7440-02-0	Plating on external leads (pins)	1.125	0.071	11,250		Epoxy resin	Trade Secret - 10105	9	
Palladium	5/3/7440	Plating on external leads (pins)	0.063	0.004	625		Amine		4	
Gold	7440-57-5	Plating on external leads (pins)	0.063	0.004	625			Total	100.00	
		TC	TALS: 100.000	6.300	1,000,000	0.47	Total (mg)	Chip (Die)	% of Total Weight	7.52
ive 2002/53/EC (End-of-Life Vehicles (ELV) Dire	erials comply with EU Directive 2 ective).	, <i>п</i>	· ·	ast Directive) a	nd with EU		Doped Silicon	7440-21-3 Total		
emiconductor device and its homogenous mate ive 2002/53/EC (End-of-Life Vehicles (ELV) Dire liance with the above EU Directives has been ve	erials comply with EU Directive 2 ective).	2002/95/EC (RoHS Directive), EU Directive 2	· ·	ast Directive) a	nd with EU	0.09	Doped Silicon (mg) Total	7440-21-3		
tive 2002/53/EC (End-of-Life Vehicles (ELV) Dire	erials comply with EU Directive : sctive). erified via internal design contro , the chemical substance is NOT of the date of this document, the	2002/95/EC (RoHS Directive), EU Directive 2 ols, supplier declarations, and /or analytical ¹ an intentional ingredient in the semicondur re is no credible reason to believe that the i	test data. ctor device and, to the	best of Microc	hip		`	7440-21-3 Total	100.00	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Dire liance with the above EU Directives has been vu emical substance is absent from the list above, ology Incorporated's knowledge and belief as ance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL9	erials comply with EU Directive : sctive). erified via internal design contro , the chemical substance is NOT of the date of this document, the atory concern for any regulatory 94 V0 flammability standard for p	2002/95/EC (RoHS Directive), EU Directive 2 ols, supplier declarations, and /or analytical an intentional ingredient in the semiconduc re is no credible reason to believe that the y scheme world-wide.	test data. ctor device and, to the unavoidable impurity	e best of Microc concentration c	hip of the chemical		(mg) Total	7440-21-3 Total Wire Bond	100.00 % of Total Weight 100	1.43
ive 2002/53/EC (End-of-Life Vehicles (ELV) Dire liance with the above EU Directives has been ve- emical substance is absent from the list above, ology Incorporated's knowledge and belief as ance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL9 ul.com/global/eng/pages/offerings/industries/ch rotective "tubes" in which the specific product	erials comply with EU Directive : sctive). erified via internal design contro , the chemical substance is NOT of the date of this document, the atory concern for any regulatory 94 V0 flammability standard for p hemicals/plastics/	2002/95/EC (RoHS Directive), EU Directive 2 ols, supplier declarations, and /or analytical an intentional ingredient in the semicondu- ere is no credible reason to believe that the / scheme world-wide. olastics. You can access the UL iQTM family	test data. ctor device and, to the unavoidable impurity of databases to obta	e best of Microc concentration c n a test report a	hip of the chemical at		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100	1.43
ive 2002/53/EC (End-of-Life Vehicles (ELV) Dire liance with the above EU Directives has been ve- emical substance is absent from the list above, loology Incorporated's knowledge and belief as c ance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL9 ul.com/global/eng/pages/offerings/industries/cf rotective "tubes" in which the specific product ertain "reels" may be made from PVC plastic. chip Technology Incorporated believes the info as in their original packing materials is true and ntee the completeness and accuracy of data in iers. Supplier information is often protected fro fors. Information is provided only as estimates c	erials comply with EU Directive : sective). erified via internal design contro , the chemical substance is NOT of the date of this document, the atory concern for any regulatory 94 V0 flammability standard for p hemicals/plastics/ is shipped are made from polyv prmation in this form concerning I correct to the best of its knowle this form because it has been c m disclosure as trade secrets ar of the average weight of these p	2002/95/EC (RoHS Directive), EU Directive 2 ols, supplier declarations, and /or analytical " an intentional ingredient in the semicondu re is no credible reason to believe that the y scheme world-wide. plastics. You can access the UL iQTM family inyl chloride (PVC) plastic. "Window envelop substances restricted by RoHS in Microchi edge and belief, as of the date listed in this f ompiled based on the ranges provided in M d some information may not have been pro arts and the average weight of anticipated s	test data. ctor device and, to thu unavoidable impurity of databases to obta pes" used to hold the p Technology Incorpor form. Microchip Techn aterial Safety Data Sh vided by subcontract ignificant toxic metal	e best of Microc concentration of n a test report a packing slip or rated's semicol ology Incorpor eets provided b assemblers an	thip of the chemical at h the outer box nductor rated cannot by raw material d raw material	0.08	(mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100 100.00	1.43
ive 2002/53/EC (End-of-Life Vehicles (ELV) Dire liance with the above EU Directives has been vi nemical substance is absent from the list above, nology Incorporated's knowledge and belief as d	erials comply with EU Directive : sctive). erified via internal design contro- , the chemical substance is NOT of the date of this document, the atory concern for any regulatory 94 V0 flammability standard for p hemicals/plastics/ is shipped are made from polyv prmation in this form concerning to correct to the best of its knowle this form because it has been c m disclosure as trade secrets ar of the average weight of these p tals, and non-metal materials co a e any warranty, express or implik porated and its subsidiaries are c	2002/95/EC (ROHS Directive), EU Directive 2 ols, supplier declarations, and /or analytical of an intentional ingredient in the semicondur re is no credible reason to believe that the re- y scheme world-wide. olastics. You can access the UL iQTM family inyl chloride (PVC) plastic. "Window envelop substances restricted by ROHS in Microchi adge and belief, as of the date listed in this is ompiled based on the ranges provided in M a some information may not have been pro arts and the average weight of anticipated s ntained within silicon devices (silicon IC) in ed, with respect to the information provided	test data. ctor device and, to thunavoidable impurity of databases to obta pes" used to hold the p Technology Incorpor form. Microchip Tech aterial Safety Data Sh vided by subcontract significant toxic metal the finished parts. in this declaration. Th	e best of Microc concentration of n a test report a packing slip or rated's semico nology Incorpor eets provided b assemblers an a components.	thip of the chemical at the outer box nductor rated cannot y raw material d raw material These nited product	0.08	(mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100 100.00 % of Total Weight	1.43

Semiconductor Device Typ	e: LT 06 (Lead) SC	- 70 (R5)		nation Base A pper Alloy (C			•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	maa	2.79	(mg) Total	Mold Compound	% ot Total Weight	42.97
Silica, vitreous	60676-86-0	Mold Compound	36.525	2.374	365,245		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound Mold Compound	2.632	0.171	26.319		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.632	0.171	26,319		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.053	0.068	10,528		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.129	0.008	1.289		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	7.079	0.460	70,793		Garbon Black	Total		
Iron	7439-89-6	Lead Frame	0.174	0.011	1,741	0.48	(mg) Total	Lead Frame	% of Total Weight	
Silver	7440-22-4	Lead Frame	0.141	0.009	1,412	0.40	Copper	7440-50-8	95.54	7.41
Zinc	7440-22-4 7440-66-6	Lead Frame	0.141	0.009	93		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	61		Silver	7439-89-8	2.35	
Aluminum oxide	1344-28-1	Die Attach	0.424	0.000	4.236		Zinc	7440-22-4	0.13	
Epoxy resin	Trade Secret	Die Attach	0.424	0.028	4,230		Phosphorous	7440-66-6	0.13	
Amine (Trade Secret - 10039)	(Trade Secret - 1	Die Attach	0.046	0.003	463		Filospiloious	Total	100.00	<u>U</u>
Silicon	7440-21-3	Chip (Die)	1.860	0.121	18,600	0.08	(mm) Tatal	Die Attach	% of Total Weight	
Gold	7440-21-3	Wire Bond	0.210	0.014	2.100	0.08	(mg) Total	1344-28-1		1.24
Tin			46.310	3.010	463,100		Aluminum oxide	Trade Secret	34 62	
	7440-31-5 Platin	ng on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:	100.000	6.500	1,000,000		Epoxy resin		4	
			100.000	6.500	1,000,000		Amine			
	0.0065 g T	otal Mass						Total	100.00	
semiconductor device and its homogenous materials comply	with LO Directive 2002/3									
ppliance with the above EU Directives has been verified via int		pplier declarations, and /or analytical test data.				0.12	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight 100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica orporated's knowledge and belief as of the date of this docume , is not below the threshold of regulatory concern for any regu	I substance is NOT an internet to the second s	pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity conce	I, to the best of	Microchip Teo	chnology	0.12	(),	,		
npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica proprated's knowledge and belief as of the date of this docume	Il substance is NOT an im ent, there is no credible re llatory scheme world-wid ibility standard for plastic	pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and asson to believe that the unavoidable impurity conce e.	I, to the best of ntration of the	Microchip Teo chemical subs	chnology	0.12	(),	7440-21-3	100	
npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica prorated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma	Il substance is NOT an im nnt, there is no credible re latory scheme world-wid ibility standard for plastic stics/	pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity conce e. .s. You can access the UL iQTM family of databases t	I, to the best of intration of the to obtain a test	Microchip Teo chemical subs report at	chnology stance, if		Doped Silicon	7440-21-3 Total	100 100.00	[
npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this docume , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic.	II substance is NOT an in ent, there is no credible re latory scheme world wid ibility standard for plastic stics/ re made from polyvinyl ch	pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and asson to believe that the unavoidable impurity conce e. :s. You can access the UL iQTM family of databases to nloride (PVC) plastic. "Window envelopes" used to h	I, to the best of ntration of the to obtain a test old the packing	Microchip Tec chemical subs report at slip on the ou	chnology stance, if uter box and		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.21
npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica prorated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar	I substance is NOT an in ent, there is no credible re latory scheme world-wid ibility standard for plastic stics/ re made from polyvinyl cl is form concerning subsi s knowledge and belief, a en compiled based on th d some information may d the average weight of	pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and asson to believe that the unavoidable impurity conce le. s. You can access the UL iQTM family of databases i nloride (PVC) plastic. "Window envelopes" used to h tances restricted by RoHS in Microchip Technology I as of the date listed in Material Safety Data Sheets pro not have been provided by subcontract assemblers anticipated significant toxic metals components. Th	I, to the best of ntration of the to obtain a test old the packing ncorporated's : gy Incorporate vided by raw m	Microchip Tec chemical subs report at y slip on the ou semiconducto d cannot guara iaterial supplie	chnology stance, if uter box and r devices in antee the ers. Supplier formation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.21
npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica prorated's knowledge and belief as of the date of this docume , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic. rrochip Technology Incorporated believes the information in th r original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts at	I substance is NOT an in ent, there is no credible re latory scheme world-wid ibility standard for plastic stics/ re made from polyvinyl ct is form concerning subsi s knowledge and belief, a en compiled based on th d some information may nd the average weight of con devices (silicon IC) in y, express or implied, with	pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and asson to believe that the unavoidable impurity conce e. s. You can access the UL iQTM family of databases in nloride (PVC) plastic. "Window envelopes" used to h tances restricted by ROHS in Microchip Technology I as of the date listed in this form. Microchip Technology I e ranges provided in Material Safety Data Sheets pro not have been provided by subcontract assemblers anticipated significant toxic metals components. The the finished parts.	I, to the best of ntration of the to obtain a test old the packing ncorporated's : gy Incorporated vided by raw m and raw materi ese estimates d tion. The exclu	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara aterial supplie al suppliers. Ir lo not include sive, limited pi	chnology stance, if uter box and r devices in antee the ers. Supplier iformation is trace levels roduct		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.21
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bilance with the above EU Directives has been verified via int hemical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu- ing compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/plase rotective "tubes" in which the specific product is shipped ar in "reels" may be made from PVC plastic. whip Technology Incorporated believes the information in the original packing materials is true and correct to the best of it leteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets and ded only as estimates of the average weight of these parts all pants, metals, and non-metal materials contained within silic whip Technology Incorporated does not provide any warrant intions, sales order acknowledgement, and invoices. whip disclaims any duty to notify users of updates or change wise, suffered by users or third parties as a result of the user wise, suffered by users or third parties as a result of the user wise, suffered by users or third parties as a result of the user wise, suffered by users or third parties as a result of the user wise, suffered by users or third parties as a result of the user wise, suffered by users or third parties as a result of the user wise, suffered by users or third parties as a result of the user wise, suffered by users or third parties as a result of the user wise, suffered by users or third parties as a result of the user wise, suffered by users or third parties as a result of the user wise as the sufferent partice as a result of the user wise as the sufferent partice as a result of the user wise as the sufferent partice as a result of the user wise as the sufferent partice as a result of the user wise as the sufferent partice as a result of the user wise as the sufferent partice as a result of the user wise as the partice as	Il substance is NOT an im ant, there is no credible re ilatory scheme world-wid ibility standard for plastic stics/ e made from polyvinyl cf is form concerning subsis s knowledge and belief, a en compiled based on th d some information may and the average weight of con devices (silicon IC) in y, express or implied, wit s subsidiaries are contail as to Material Content De	pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device and asson to believe that the unavoidable impurity conce le. s. You can access the UL iQTM family of databases i nloride (PVC) plastic. "Window envelopes" used to h tances restricted by ROHS in Microchip Technology I as of the date listed in this form. Microchip Technology I e ranges provided in Material Safety Data Sheets pro not have been provided by subcontract assemblers anticipated significant toxic metals components. The the finished parts.	I, to the best of nntration of the to obtain a test old the packing ncorporated's : gy Incorporated vided by raw m and raw materi see estimates d tion. The exclu sale. These are	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara aterial suppliers. Ir lo not include sive, limited pi provided in N , consequentia	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct licrochip's al or	0.01	(mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	46.31

Basic Substance CAS Number Sub-Component Weight mygart ppn 131.03 (mg) Test Mod Compound % a Tost Weight 78.4 Since Nitron 0.077-06-0 Mod Compound 63.24 113.80 (mg) Test Mod Compound % a Tost Weight 78.4 Converting 1.13.80 663.54 113.80 (mg) Test Mod Compound 63.24 113.80 (mg) Test Mod Compound 0.31 0.22 100.05 No.81 0.31 0.22 100.05 No.81 0.31 0.22 100.05 No.81 0.31 0.22 100.05 100.05 100.05 100.05 100.05 0.22 100.05 100.24 100.05 0.22 100.05 100.24 0.20 100.25 100.24 2.45 100.24 100.05 100.24 100.05 100.24 100.05 100.24 100.05 100.24 100.05 100.24 100.05 100.24 100.05 100.24 100.05 100.24 100.05 100.24 100.05 100.24 <td< th=""><th>Semiconductor Device Typ</th><th>e: SS 20 (Lead)</th><th>SSOP .209" (G3 / GF)</th><th></th><th>nation Base opper Alloy (</th><th></th><th></th><th></th><th>geneous Materials: . pc boards, displays</th><th>5)</th><th>JEDEC 97 Product Markin and/or Pkg. Labeling e3</th></td<>	Semiconductor Device Typ	e: SS 20 (Lead)	SSOP .209" (G3 / GF)		nation Base opper Alloy (geneous Materials: . pc boards, displays	5)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Lists: Subtraction Control Subtraction Note of the second			"Contained In"				131.03	(mg) Total	Mold Compound	% ot Total Weight	79.8
Eacy Resin (b) borning by defaulting transition Trade Sect Model Compound 6.121 10.060 61.207 Puncick Resin (b) borning by defaulting transition Trade Sect Model Compound 6.012 Feature Resin (b) borning by defaulting trade Sect 7.67 Puncick Resin (b) borning by defaulting transition Trade Sect 7.67 7.61 7.62			•					,			
Private Ream (Ne Br / C. BIO). Not diterminory masked) Table Storm Model Compound 4.078 6.088 40.777 Components Components 6.11 Cultor Biolog 1333.844 Model Compound 0.2407 6.088 40.778 Components 1333.844 6.011 0.020 1000 Cultor Biolog 7440-244 Lead Finam 0.237 0.013 0.232 131 Intel Steret 5.01 1000 <td></td>											
Carbon Black 1332-86-4 Model Compound 0.247 0.406 2.474 (mathematical control of the compound of											
Copper 7445-06-0 Lad Finine 10.031 16.472 100.31 100.472 100.31 100.472 100.31 100.31 100.31 100.31 100.31 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>											
$\frac{ n }{ n } + \frac{1}{124} \frac{ n }{ n } + \frac{1}{124} \frac{ n }{ n } + \frac{1}{124} \frac{ n }{ n } + \frac{ n }{ n } + \frac{1}{124} \frac{ n }{ n } + \frac{ n }{ n } + \frac{ n }{ n } + \frac{1}{124} \frac{ n }{ n } + \frac{ n }$								Ourboin Diack			1
Silver 7440-22-4 Land Fame 0.200 0.328 2.000 2nc 724.02 1.001 0.328 2.000 100 2.000 2.000 100 0.028 0.014 0.028 0.014 0.028 0.014 0.028 0.014 0.028 0.014 0.005 0.014 0.005 0.014 0.005 0.014 0.005 0.014 0.005 0.014 0.005 0.014 0.005 0.014 0.005 0.014 0.005 0.014 0.005 0.013 0.022 0.013 0.022 0.013 0.005 0.013 0.023 0.013 0.023 0.013 0.005 0.013 0.005 0.013 0.023 0.013 0.013 0.023 0.013 0.013 0.013 0.013 0.013 0.023 0.013 0.023 0.013 0.013 0.023 0.013 0.013 0.013 0.013 0.013 0.013 0.013 0.013 0.013 0.013 0.013 0.013 0.013 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>17 24</td><td>(mg) Total</td><td></td><td></td><td>10.5</td></td<>							17 24	(mg) Total			10.5
Dr.m. 7440-06-6 Lead Frame 0.013 0.022 131 Model FLAg 7420-26-0 Die Alasin 0.059 0.024 877 Model FLAg 7420-26-0 Die Alasin 0.059 0.024 6507 Model FLAg 6420 0.056 <t< td=""><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td>10.0</td></t<>				-							10.0
Silver (Ag) 7440 224 Die Atlach 0.583 0.924 5,625 Digloch/error bisghend-F 64208 63.6 Die Atlach 0.056 0.024 6,625 Middlied Zowy Rein 1627 61,026 0.63 0.024 6,625 0.024 6,635 Middlied Zowy Rein 7440,215 Die Atlach 0.026 0.026 663 1.23 ring Total 100.00 164.20 75.00 100.00 164.20 1,600.00 164.20											
Modified Epoly Resin 13961-08-5 Die Atlach 0.056 0.027 1.050 Bilgroom 426/48-38 Die Atlach 0.026 6.03 1.23 (mg) Total Die Atlach 0.08 Modified Amine 827-48-0 Die Atlach 0.026 6.043 2.85 1.23 (mg) Total Die Atlach 0.08 Opped Gold 7440-97-6 Wire Bord 7500 1.23 (mg) Total Die Atlach 4.06 Discom 7440-97-6 Wire Bord 7400-97-10 1.0000 62.00 1.00000 Discome 0.164.2 gr Distal Mass 1000.000 64.200 1.00000 164.200 1.00000 164.200 1.00000 164.200 1.00000 164.200 1.00000 164.200 1.00000 164.200 1.00000 164.200 1.000000 164.200 1.000000 164.200 1.0000000 164.200 1.000000000000000000000000000000000000	Phosphorous	7723-14-0	Lead Frame	0.009	0.014	87		Silver	7440-22-4	1.91	
Diginal/perter of sisphenol-F 64208-63-8 Die Attach 0.056 0.092 653 1000000000000000000000000000000000000	Silver (Ag)	7440-22-4	Die Attach	0.563	0.924	5,625		Zinc	7440-66-6	0.13	
Modified Amine 627-43-0 Die Attach 0.026 0.043 283 1.23 (reg) Teal Die Attach 5.00 Bilton 7440-27.3 Chip (Die) 75.000 12.315 75.000 12.315 75.000 12.315 75.000 Modified Amine 764.022.4 750.00 12.315 7440.27.4 750.00 12.315 7240.224 750.00 Modified Amine 7440.27.4 750.00 10.010 7440.27.4 750.00 10.010 7440.27.4 750.00 Modified Amine 7440.27.4 750.00 10.020								Phosphorous	7723-14-0		
Silicon 7440-213 Chip (Die) 7.500 12.315 7.500 Silicon 7.440-21-4 7.500 Tin 7440-21-5 Wire Bord 2.0200 1.250 2.053 12.500 Uncold of the second se								-	Total	100.00	
Depod Gold 2440-957 Wrie Bond 0.328 2.000 Th 7440-957 Plang on external loss (pm) - Matter Tri Arranaled at 190°C for 1 hour 1.250 2.0.83 12.500 0.1642 g Total Mass TOTALS: 100.000 144.280 1,300,000 Worldied Arrise 5/24.94 3.50 semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 102.00 Vortal Weight of 2.500 (Plang) Notalised Arrise 5/24.94 3.50 ubout 2002/95/EC (End-of-Life Vehicles (EUX) Directive), IU Directive 2002/95/EC (RoHS Directive), EU Directive 2002/95/EC (RoHS Directive), and or analytical test data. 102.00 Vortal Weight of 2.50 Total 100.00							1.23	(mg) Total	Die Attach	% of Total Weight	0.75
Tim Tell											
Outcome TOTALS: TOTALS: TOTALS: TOTALS: TOTALS: TOTALS: TOTALS: TOTALS: Total Total <tht dot<="" dots="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tht>											
Outload Total Total <tht th="" total<=""></tht>	Tin	7440-31-5									
semiconductor device and its homogenous materials comply with EU Directive 2002/SPEC (ENd-51-life Vehicles (ELV) Directive). Universe 2002/SPEC (End-61-life Vehicles (ELV) Directive). Vintue 2002/SPEC (End-61-life Vehicles (ELV) Directive). Total Chip (Die) % of Total Weight 7.5 uplance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data. Doped Silcon 740-21:3 100 protective 'tubes' Nowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not below the threshold of regulatory concern for any regulatory scheme world/wide. Total 0.33 (mg) Total Wire Bond % of Total Weight 0.2 protective 'tubes' in the second of				100.000	164.200	1,000,000		Modified Amine			
tive 2002/SVEC (End-of-Life Vehicles (ELV) Directive). The definition of the second of		0.1642	g Total Mass						Total	100.00	
hemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology porated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not below the threshold of regulatory concern for any regulatory and for pastics. You can access the UL VC plastic. "Window envelopes" used to hold the packing slip on the outer box. Total 100.00 Total Total 7440-57-5 100.00 Total 100.0		with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	Recast Dire	ective) and wi	th EU	12.32	(mg) Total	Chip (Die)	% of Total Weight	7.5
International substance is above, the chemical substance is NOT and international might is a other due to this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if is not below the threshold of regulatory concern for any regulatory scheme world-wide. ining compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at "Jul.com/globable/ng/pages/differings/ndustries/chemical/substance) 0.33 (mg) Total Wire Bond % of Total Weight 0.2 Vill.com/globable/ng/pages/differings/ndustries/chemical/substance Doped Gold 7440-57-5 100.00 Total 100.00 Total Wire Bond % of Total Weight 0.2 is not below the threshold of regulatory concern for any regulatory scheme world-wide. Total 0.33 (mg) Total Wire Bond % of Total Weight 0.2 is not below the threshold of regulatory concern for any regulatory scheme world-wide. Total 0.30 (mg) Total Doped Gold 7440-57-5 100.00 Total 100.00 Total 100.00 Total 0.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>											
protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box certain "reels" may be made from PVC plastic. Total 100.00 Total		•						Doped Silicon		100]
certain "reels" may be made from PVC plastic. orchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices heir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the pleter information in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. plier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Total 100.00 the true tevels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Total verge weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not tact trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Total 100.00 Plating on external leads (pins) - Matte Tin / nour pochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. Tin 7440-31-5 100.00 Tin 7440-31-5 100.00	chemical substance is absent from the list above, the chemical rporated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regul ding compounds used by Microchip meet the UL94 V0 flammat	substance is NOT a nt, there is no credib atory scheme world- bility standard for pla	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide.	tration of the	e chemical sul		0.33		Total	100 100.00	
cochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices believes to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the pleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. These estimates of the average weight of anticipated significant toxic metals components. These estimates do not transported of these parts and the average weight of anticipated significant toxic metals components. These estimates do not due trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. cochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. 2.05 (mg) Total Plating on external leads (pins) - Matter Tin / hour % of Total Weight 1.25 (mg) Total reviews, suffered by users of third parts is as a result of the users' reliance on the information in Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or reviews (SGS) Tin 7440-31-5 100.00	hemical substance is absent from the list above, the chemical rporated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regul ding compounds used by Microchip meet the UL94 V0 flammat ://ul.com/global/eng/pages/offerings/industries/chemicals/plase	I substance is NOT a nt, there is no credib latory scheme world- bility standard for pla tics/	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. Instics. You can access the UL IQTM family of databases to	tration of the obtain a tes	e chemical sul t report at	bstance, if	0.33	(mg) Total	Total Wire Bond	100 100.00 % of Total Weight	
Ochip Technology Incorporated does not provide any warranty, express of implied, with respect to the information provide in this declaration. The exclusive, initied product 2.05 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour % of Total Weight 1.25 tations, sales order acknowledgement, and invoices. 2.05 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour % of Total Weight 1.25 totopic provide by Users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or Tin 7440-31-5 100.00 f this Certificate of Compliance for semiconductor products. Tin 7440-31-5 100.00 100.00	chemical substance is absent from the list above, the chemical rporated's knowledge and belief as of the date of this docume , is not below the threshold of regulatory concern for any regul ding compounds used by Microchip meet the UL94 V0 flammat ://ul.com/global/eng/pages/offerings/industries/chemicals/plase	I substance is NOT a nt, there is no credib latory scheme world- bility standard for pla tics/	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. Instics. You can access the UL IQTM family of databases to	tration of the obtain a tes	e chemical sul t report at	bstance, if	0.33	(mg) Total	Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	0.2
erwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS)	chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this documen- is not below the threshold of regulatory concern for any regul ding compounds used by Microchip meet the UL94 V0 flammat ://ul.com/global/eng/pages/offerings/industries/chemicals/plass protective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic. cochip Technology Incorporated believes the information in this heir original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has bee plier information is often protected from disclosure as trade se mation is provided only as estimates of the average weight of	I substance is NOT a nt, there is no credib latory scheme world- bility standard for pla- tics/ e made from polyvin s form concerning s its knowledge and b en compiled based o ecrets and some info these parts and the	In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. Istics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technology In the anges provided in Material Safety Data Sheets provi rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	tration of the obtain a tes d the packin corporated's ogy Incorpora ded by raw r mblers and r	e chemical sul t report at g slip on the semiconduci ated cannot g naterial supp aw material s	bstance, if outer box tor devices juarantee the liers. suppliers.	0.33	(mg) Total	Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	0.2
Total 100.00	chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this documer, is not below the threshold of regulatory concern for any regul ding compounds used by Microchip meet the UL94 V0 flammat ://ul.com/global/eng/pages/offerings/industries/chemicals/plass protective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in this heir original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has bee plier information is often protected from disclosure as trade se rmation is provided only as estimates of the average weight of ude trace levels of dopants, metals, and non-metal materials cor- prochip Technology Incorporated does not provide any warranty	I substance is NOT a nt, there is no credib latory scheme world- bility standard for pla- tics/ e made from polyvin s form concerning s its knowledge and b en compiled based o crets and some info these parts and the ontained within silico y, express or implied	In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. Istics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets provi rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con on devices (silicon IC) in the finished parts. , with respect to the information provided in this declarati	tration of the obtain a tes d the packin corporated's ogy Incorpor, ded by raw r mblers and r nponents. Th on. The exclu	e chemical sul t report at g slip on the semiconduct ated cannot g naterial suppi aw material suppi aw material suppi save estimates usive, limited	bstance, if outer box tor devices juarantee the liers. uppliers. s do not product		(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 100.00	0.2
	chemical substance is absent from the list above, the chemical rporated's knowledge and belief as of the date of this documen- is not below the threshold of regulatory concern for any regul ling compounds used by Microchip meet the UL94 V0 flammat ://ul.com/global/eng/pages/offerings/industries/chemicals/plasi protective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in thi- ieir original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has bee plier information is often protected from disclosure as trade as rmation is provided only as estimates of the average weight of ide trace levels of dopants, metals, and non-metal materials cc ochip Technology Incorporated does not provide any warranty anties provided by Microchip Technology Incorporated and its tations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or change- rwise, suffered by users or third parties as a result of the users.	I substance is NOT a nt, there is no credib latory scheme world- bility standard for pla- tics/ e made from polyvin s form concerning s its knowledge and b en compiled based o parcets and some info these parts and the ontained within silico y, express or implied s subsidiaries are co s to Material Conten	Intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. Istics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology In elief, as of the date listed in this form. Microchip Technolo in the ranges provided in Material Safety Data Sheets provi rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con on devices (silicon IC) in the finished parts. , with respect to the information provided in this declarati ntained in Microchip's standard terms and conditions of s	ration of the obtain a tes d the packin corporated's gy Incorpor ded by raw r mblers and r upponents. Th on. The exclu ale. These ar set or indirec	e chemical sul t report at g slip on the semiconduct ated cannot g material supp aw material s ese estimater aw material s ese estimated e provided in ct, consequen	bstance, if outer box tor devices juarantee the liers. suppliers. s do not product Microchip's tial or		(mg) Total Doped Gold (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100 100.00 % of Total Weight 100.00 % of Total Weight 100.00	0.2

MICROCHIP				nation Base / pper Alloy (C				ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: SS 24 (Lead			•				-		e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	121.55	(mg) Total	Mold Compound	% ot Total Weight	65.17
Silica, vitreous	60676-86-0	Mold Compound	55.395	103.316	553,945		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.992	7,445	39.917		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.992	7.445	39,917		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.597	2.978	15,967		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.196	0.365	1,955		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	28.222	52.636	282,218			Total	100.00	
Iron	7439-89-6	Lead Frame	0.694	1.295	6,942	55.10	(mg) Total	Lead Frame	% of Total Weight	29.54
Silver	7440-22-4	Lead Frame	0.563	1.050	5,627		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.037	0.069	369		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.024	0.045	244		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.622	1.159	6,216		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.168	0.313	1,680		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.025	0.047	252			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.025	0.047	252	1.57	(mg) Total	Die Attach	% of Total Weight	0.84
Silicon	7440-21-3	Chip (Die)	2,490	4,644	24.900		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.250	0.466	2,500		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.710	3,189	17,100		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	186.510	1.000.000		Gamma-butvrolactone	96-48-0	3	
	0.1865	g Total Mass			,,			Total	100.00	
s semiconductor device and its homogenous materials comply	with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	ctive) and with	EU					
						4.64	Total (mg)	Chip (Die)	% of Total Weight	2.49
mpliance with the above EU Directives has been verified via intr chemical substance is absent from the list above, the chemical	I substance is NOT	in intentional ingredient in the semiconductor device and,		Microchip Teo	chnology	4.64	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	100	2.49
mpliance with the above EU Directives has been verified via intr chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this docume <i>t</i> , is not below the threshold of regulatory concern for any regul Iding compounds used by Microchip meet the UL94 V0 flammal	I substance is NOT a ent, there is no credi latory scheme world bility standard for p	in intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen -wide.	tration of the	Microchip Tec	chnology	0.47	,	7440-21-3	100	
mpliance with the above EU Directives has been verified via inte chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this docume v, is not below the threshold of regulatory concern for any regul lding compounds used by Microchip meet the UL94 V0 flammal o://ul.com/global/eng/pages/offerings/industries/chemicals/plas e protective "tubes" in which the specific product is shipped an	I substance is NOT a ent, there is no credi latory scheme work bility standard for p stics/	n intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen -wide. astics. You can access the UL iQTM family of databases to	tration of the obtain a test	Microchip Tec chemical subs report at	chnology stance, if		Doped Silicon	7440-21-3 Total	100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via intr chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this docume y, is not below the threshold of regulatory concern for any regul lding compounds used by Microchip meet the UL94 V0 flammal p://ul.com/global/eng/pages/offerings/industries/chemicals/plas e protective "tubes" in which the specific product is shipped an tain "reels" may be made from PVC plastic.	I substance is NOT a int, there is no credi latory scheme world bility standard for p itics/ e made from polyvir	In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho	tration of the o obtain a test Id the packing	Microchip Teo chemical subs report at g slip on the or	chnology stance, if uter box and		(mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
mpliance with the above EU Directives has been verified via into chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this docume y, is not below the threshold of regulatory concern for any regul lding compounds used by Microchip meet the UL94 V0 flammal p://ul.com/global/eng/pages/offerings/industries/chemicals/plas e protective "tubes" in which the specific product is shipped an	I substance is NOT : int, there is no credi latory scheme world bility standard for p titos/ e made from polyvin is form concerning : s knowledge and be en compiled based d some information d the average weigi	In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lef, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	tration of the o obtain a test Id the packing corporated's a y Incorporated ided by raw m nd raw materi	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara naterial supplices. In	chnology stance, if uter box and r devices in antee the ers. Supplier iformation is		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
mpliance with the above EU Directives has been verified via inter- chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this docume <i>y</i> , is not below the threshold of regulatory concern for any regul Iding compounds used by Microchip meet the UL94 V0 flammal p://ul.com/global/eng/pages/offerings/industries/chemicals/plas e protective "tubes" in which the specific product is shipped an tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in thi if original packing materials is true and correct to the best of its mpleteness and accuracy of data in this form because it has bee ormation is often protected from disclosure as trade secrets an wided only as estimates of the average weight of these parts ar	I substance is NOT : int, there is no credi latory scheme work bility standard for p titcs/ e made from polyvin is form concerning : s knowledge and be en compiled based d some information nd the average weig on devices (silicon i y, express or implie	In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a at of anticipated significant toxic metals components. The C) in the finished parts.	tration of the o obtain a test Id the packing corporated's of y Incorporated ided by raw m nd raw materi ee estimates d on. The exclu	Microchip Ter chemical subs report at g slip on the or semiconducto d cannot guara aterial supplie al supplieration supplieration suppli suppli supplieration su	chnology stance, if uter box and r devices in antee the ers. Supplier formation is trace levels roduct		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
mpliance with the above EU Directives has been verified via into chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this docume <i>t</i> , is not below the threshold of regulatory concern for any regul Iding compounds used by Microchip meet the UL94 V0 flammal p://ul.com/global/eng/pages/offerings/industries/chemicals/plas a protective "tubes" in which the specific product is shipped an tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in thi ir original packing materials is true and correct to the best of it mpleteness and accuracy of data in this form because it has be ormation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts ar dopants, metals, and non-metal materials contained within silic crochip Technology Incorporated does not provide any warrant tranties provided by Microchip Technology Incorporated and it	I substance is NOT : Int, there is no credi latory scheme world billity standard for p titcs/ e made from polyvin is form concerning : s knowledge and be en compiled based of d some information d the average weig on devices (silicon i y, express or implie s subsidiaries are con- es to Material Conter	In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technolog in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The C) in the finished parts.	tration of the obtain a test Id the packing corporated's i y Incorporated ided by raw m nd raw materi se estimates d on. The exclu ale. These are ect or indirect	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guar- naterial suppliers. In lo not include sive, limited p e provided in M	chnology stance, if iter box and r devices in antee the rs. Supplier nformation is trace levels roduct licrochip's al or	0.47	(mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100 100.00 % of Total Weight 100 100.00	0.25
pliance with the above EU Directives has been verified via into chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regul ding compounds used by Microchip meet the UL94 V0 flammal <i>J(ULCom/global/eng/pages/offerings/industries/chemicals/plas</i> protective "tubes" in which the specific product is shipped an ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in thir original packing materials is true and correct to the best of its pleteness and accuracy of data in this form because it has be rivation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts ar opants, metals, and non-metal materials contained within silic ochip Technology Incorporated does not provide any warrant ranties provided by Microchip Technology Incorporated and its tations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or change rivise, suffered by users or third parties as a result of the users of the secure of the secure to the secure and the tations, sales order acknowledgement, and invoices.	I substance is NOT : Int, there is no credi latory scheme world billity standard for p titcs/ e made from polyvin is form concerning : s knowledge and be en compiled based of d some information d the average weig on devices (silicon i y, express or implie s subsidiaries are con- es to Material Conter	In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technolog in the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The C) in the finished parts.	tration of the obtain a test Id the packing corporated's i y Incorporated ided by raw m nd raw materi se estimates d on. The exclu ale. These are ect or indirect	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guar- naterial suppliers. In lo not include sive, limited p e provided in M	chnology stance, if iter box and r devices in antee the rs. Supplier nformation is trace levels roduct licrochip's al or	0.47	(mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00	0.25

				nation Base / pper Alloy (C			•	ogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: SS and SI 28									e3
Decis October		"Contained In" Sub-Component	% I otal Weight			182.90	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number		•	mg/part	ppm					
Silica, vitreous	60676-86-0	Mold Compound	67.830	155.466	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	11.203	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	11.203	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	4.481	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.549	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	22.992	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.566	2,468	24.07	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.458	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.030	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.020	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	1.289	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.241	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.129	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.060	263	1.72	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	17.190	75,000		Silver (Ag)	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.200	0.458	2,000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	2.865	12,500	Di	glycidylether of bisphenol-F	54208-63-8	8	
		TOTALS:	100.000	229.200	1,000,000		Modified Amine	827-43-0	4	
	0.2292	g Total Mass						Total	100.00	
s semiconductor device and its homogenous materials comply active 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	IS Recast Direc	ctive) and with	EU	17.19	Total (mg)	Chip (Die)	% of Total Weight	7.5
active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Appliance with the above EU Directives has been verified via int	ernal design control	s, supplier declarations, and /or analytical test data.				17.19	Total (mg) Doped Silicon	7440-21-3	100	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica prorated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu	ernal design control I substance is NOT a ent, there is no credil latory scheme world	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer I-wide.	, to the best of ntration of the	Microchip Te chemical sub	chnology	17.19	,			7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ernal design control I substance is NOT a ent, there is no credil latory scheme world bility standard for pl	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer I-wide.	, to the best of ntration of the	Microchip Te chemical sub	chnology	17.19 0.46	,	7440-21-3	100	0.2
sctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica proprated's knowledge and belief as of the date of this docume , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma	ernal design control I substance is NOT a ent, there is no credil latory scheme world bility standard for pi tics/	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL iQTM family of databases t	, to the best of ntration of the o obtain a test	Microchip Te chemical sub report at	chnology stance, if		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma .//ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped an	ernal design control I substance is NOT a nt, there is no credil latory scheme world bility standard for pl tits/ e made from polyvir is form concerning s s knowledge and be en compiled based d d some information d the average weigl	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's a yy Incorporated vided by raw m	Microchip Ter chemical sub: report at g slip on the or semiconducto d cannot guar- naterial supplie	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemical prorated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu- ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plas- protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic. prochip Technology Incorporated believes the information in the r original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts al	ernal design control I substance is NOT a nt, there is no credil latory scheme world bility standard for pl tics/ e made from polyvir is form concerning s s knowledge and be en compiled based d d some information d the average weigl on devices (silicon I y, express or implier	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The C) in the finished parts.	, to the best of ntration of the o obtain a test old the packing ncorporated's : yy Incorporate vided by raw m and raw materi se estimates d	Microchip Te chemical sub: report at g slip on the or semiconducto d cannot guar naterial suppliers. I lo not include sive, limited p	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemical proprated's knowledge and belief as of the date of this docume , is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in th r original packing materials is true and correct to the best of it typeleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets an vided only as estimates of the average weight of these parts al opants, metals, and non-metal materials contained within silic rochip Technology Incorporated does not provide any warrant ranties provided by Microchip Technology Incorporated and it	ernal design control I substance is NOT a int, there is no credil latory scheme world bility standard for pi stics/ e made from polyvir is form concerning s s knowledge and be en compiled based of d some information nd the average weigh ion devices (silicon I y, express or implies s ubsidiaries are co as to Material Conter	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarat intained in Microchip's standard terms and conditions of the toclarations and shall not be liable for any damages, di	, to the best of ntration of the o obtain a test old the packing ncorporated's of y Incorporated's y Incorporated vided by raw m and raw materi use estimates d tion. The exclu sale. These are rect or indirect	Microchip Tec chemical sub: report at g slip on the or semiconducto d cannot guara aterial suppliers. I lo not include sive, limited p p provided in M	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	0.46	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100 100.00 % of Total Weight 100 100.00	0.2

AICROCHIP Semiconductor Devic	e Type: WHE 32 TSC	OP 8x14mm (W6)		nation Base opper Alloy (•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In" Sub-Component	% I otal Weight			199.26	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	•		mg/part	ppm				05.00	
Silica, vitreous (or fused) Epoxy Resin	60676-86-0 Trade Secret	Mold Compound Mold Compound	67.830 6.943	169.372 17.336	678,300 69.426		Silica, vitreous (or fused) Epoxy Resin	60676-86-0 Trade Secret	85.00 8.70	
Phenolic Resin	Trade Secret	Mold Compound Mold Compound	4.788	11.956	47,880		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.598	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.000	24.971	100.003			Total		
Nickel	7440-02-0	Lead Frame	0.267	0.666	2,667	26.22	(mg) Total	Lead Frame	% of Total Weight	10.5
Silicon	7440-21-3	Lead Frame	0.047	0.118	473		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.011	0.026	105		Nickel	7440-02-0	2.54	
Šilver	7440-22-4	Lead Frame	0.175	0.438	1,752		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.600	1.498	6,000		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade Secret	Die Attach	0.128	0.318	1,275		Silver	7440-22-4	1.67	
Copper	7440-50-8	Die Attach	0.023	0.056	225			Total		-
Silicon	7440-21-3	Chip (Die)	7.500	18.728	75,000	1.87	(mg) Total	Die Attach	% of Total Weight	0.75
Doped Gold	7440-57-5	Wire Bond	0.200	0.499	2,000		Silver	7440-22-4	80.00	
Tin	7440-31-5 P	lating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.121	12,500		Epoxy Resin	Trade Secret	17.00	
		TOTALS:	100.000	249.700	1,000,000		Copper	7440-50-8 Total	3.00 100.00	
s semiconductor device and its homogenous materials o ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified		2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS supplier declarations, and /or analytical test data.	S Recast Dire	ective) and wit	th EU	18.73	(mg) Total Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch	via internal design controls, s hemical substance is NOT an i	supplier declarations, and /or analytical test data.	to the best o	f Microchip To	echnology	18.73			100	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch	via internal design controls, s hemical substance is NOT an i locument, there is no credible	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concent	to the best o	f Microchip To	echnology	18.73		7440-21-3	100	7.5
cctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch proprated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an	via internal design controls, s hemical substance is NOT an i locument, there is no credible ny regulatory scheme world-w 'lammability standard for plasi	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concent	to the best o tration of the	f Microchip Te chemical sub	echnology	18.73 0.50		7440-21-3	100	0.2
sctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch prporated's knowledge and belief as of the date of this d , is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fi ://ul.com/global/eng/pages/offerings/industries/chemica	via internal design controls, s hemical substance is NOT an i locument, there is no credible ny regulatory scheme world-w 'lammability standard for plasi als/plastics/	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concent ide.	to the best o tration of the obtain a tes	f Microchip To chemical sul t report at	echnology ostance, if		Silicon	7440-21-3 Total	100 100.00	
sctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch proprated's knowledge and belief as of the date of this d , is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fl ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic.	via internal design controls, s hemical substance is NOT an i locument, there is no credible ny regulatory scheme world-w 'lammability standard for plast als/plastics/ sped are made from polyvinyl	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concent ide. tics. You can access the UL iQTM family of databases to	to the best o tration of the obtain a tes Id the packin	f Microchip To chemical sul t report at g slip on the o	echnology ostance, if outer box		Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight 100.00	
cctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 ff :/ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information r original packing materials is true and correct to the be pleteness and accuracy of data in this form because it I plier information is often protected from disclosure as t	I via internal design controls, s hemical substance is NOT an i locument, there is no credible y regulatory scheme world-w 'lammability standard for plast als/plastics/ opped are made from polyvinyl on in this form concerning sub ist of its knowledge and belief has been compiled based on i trade secrets and some inform eight of these parts and the av	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concen- ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to hol ostances restricted by RoHS in Microchip Technology Im , as of the date listed in this form. Microchip Technology Im the ranges provided in Material Safety Data Sheets provi nation may not have been provided by subcontract asse erage weight of anticipated significant toxic metals con	to the best o tration of the obtain a tes d the packin corporated's y Incorporate ided by raw r mblers and r	f Microchip Tr chemical sul t report at g slip on the o semiconduct d cannot gua material suppl aw material s	echnology ostance, if outer box or devices in rantee the liers. uppliers.		Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
cctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the cf orporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 ff :/ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information r original packing materials is true and correct to the be pleteness and accuracy of data in this form because it I mation is provided only as estimates of the average we ude trace levels of dopants, metals, and non-metal mate rochip Technology Incorporated does not provide any w	I via internal design controls, s hemical substance is NOT an i locument, there is no credible ny regulatory scheme world-w 'lammability standard for plasi als/plastics/ opped are made from polyvinyl opped are made from polyvinyl on in this form concerning sub test of its knowledge and belief has been compiled based on f trade secrets and some inform eight of these parts and the av erials contained within silicon varranty, express or implied, v	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concen- ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to hol ostances restricted by RoHS in Microchip Technology Im , as of the date listed in this form. Microchip Technology Im the ranges provided in Material Safety Data Sheets provi nation may not have been provided by subcontract asse erage weight of anticipated significant toxic metals con	to the best o tration of the obtain a tes id the packin corporated's y Incorporate ded by raw r mblers and r aponents. Th on. The exclu	f Microchip Tr chemical sul t report at g slip on the o semiconduct ed cannot gua naterial suppl aw material s ese estimates usive, limited	echnology ostance, if outer box tor devices in rantee the liers. uppliers. a do not product		(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch rpporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fl ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. rrochip Technology Incorporated believes the information r original packing materials is true and correct to the be pleteness and accuracy of data in this form because it I piler information is often protected from disclosure as t rmaties provided only as estimates of the average we ude trace levels of dopants, metals, and non-metal mate rochip Technology Incorporated does not provide any w ranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or of	I via internal design controls, s hemical substance is NOT an i locument, there is no credible ny regulatory scheme world-w 'lammability standard for plasi als/plastics/ opped are made from polyvinyl on in this form concerning sub ist of its knowledge and belief has been compiled based on f trade secrets and some inform eight of these parts and the av erials contained within silicon varranty, express or implied, v I and its subsidiaries are conter changes to Material Content E he users' reliance on the infor	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concen- ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to hol ostances restricted by RoHS in Microchip Technology Im , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provi ration may not have been provided by subcontract asser- verage weight of anticipated significant toxic metals com devices (silicon IC) in the finished parts. with respect to the information provided in this declaration	to the best o tration of the obtain a tes d the packin corporated's l Incorporate dded by raw i mblers and r mblers and r mponents. Th on. The exclu ale. These ar act or indirect	f Microchip Te chemical sub t report at g slip on the of semiconduct d cannot gua naterial suppl aw material s ese estimates usive, limited e provided in t, consequen	echnology ostance, if outer box tor devices in rantee the liers. uppliers. s do not product Microchip's tial or	0.50	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 100.00	0.2

MICROCHIP				ination Base opper Alloy (•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Semiconductor Devic	e Type: EIE 40 TSOP 10x2									
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	309.52	(mg) Total	Mold Compound	% ot Total Weight	67.2
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.120	263.095	571,200		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.846	26.929	58,464		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.032	18.571	40,320		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.202	0.929	2,016		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	26.248	120.900	262,484			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.700	3.224	7,000	126.94	(mg) Total	Lead Frame	% of Total Weight	27.56
Silicon	7440-21-3	Lead Frame	0.124	0.571	1,240		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.028	0.127	276		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.460	2.119	4,600		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.360	1.658	3,600		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade Secret	Die Attach	0.077	0.352	765		Silver	7440-22-4	1.67	
Copper	7440-50-8	Die Attach	0.014	0.062	135		•	Total	100.00	•
Silicon	7440-21-3	Chip (Die)	1.900	8.751	19,000	2.07	(mg) Total	Die Attach	% of Total Weight	0.45
Doped Gold	7440-57-5	Wire Bond	0.280	1.290	2.800		Silver	7440-22-4	80.00	
Tin	7440-31-5 Plating of	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.610	12.022	26,100		Epoxy Resin	Trade Secret	17.00	
		TOTALS:	100.000	460.600	1,000,000		Copper	7440-50-8	3.00	
	0.4606 g Tot	tal Mass						Total	100.00	1
		· · · · · · · · · · · · · · · · · · ·	0 11000001 2110	ective) and wit	II EU	8.75	(mg) Total	Chip (Die)	% of Total Weight	1.9
mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this do	emical substance is NOT an intent ocument, there is no credible reaso	ier declarations, and /or analytical test data.	to the best o	f Microchip Te	echnology	8.75	(mg) Total Silicon	Chip (Die) 7440-21-3 Total	100	
mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch orporated's knowledge and belief as of the date of this do y, is not below the threshold of regulatory concern for an Iding compounds used by Microchip meet the UL94 V0 fi	nemical substance is NOT an intent ocument, there is no credible reaso y regulatory scheme world-wide. ammability standard for plastics. Y	ier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concen	to the best o stration of the	of Microchip Te e chemical sub	echnology	8.75		7440-21-3	100	
mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this da y, is not below the threshold of regulatory concern for an yolding compounds used by Microchip meet the UL94 V0 fl p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship	emical substance is NOT an intent ocument, there is no credible rease y regulatory scheme world-wide. ammability standard for plastics. N Is/plastics/	ier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concen You can access the UL iQTM family of databases to	to the best o atration of the pobtain a tes	of Microchip Te e chemical sub at report at	echnology istance, if		Silicon	7440-21-3 Total	100 100.00	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this da y, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 fl tp://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information is often protected from disclosure as trade secr in original packing materials is true and correct to the bes mpleteness and accuracy of data in this form because it to formation is often protected from disclosure as trade secr provided only as estimates of the average weight of these rels of dopants, metals, and non-metal materials containe	emical substance is NOT an intent ocument, there is no credible reaso y regulatory scheme world-wide. ammability standard for plastics. N Is/plastics/ ped are made from polyvinyl chlor n in this form concerning substanc st of its knowledge and belief, as o nas been compiled based on the ra rets and some information may not o parts and the average weight of a	ier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer You can access the UL iQTM family of databases to ide (PVC) plastic. "Window envelopes" used to ho ces restricted by RoHS in Microchip Technology In f the date listed in this form. Microchip Technology inges provided in Material Safety Data Sheets prov t have been provided by subcontract assemblers a inlicipated significant toxic metals components. Th	to the best o tration of the o obtain a tes Id the packin corporated's y Incorporate ided by raw f ind raw matei	of Microchip Te e chemical sub at report at ng slip on the o semiconduct ad cannot gua material suppl rial suppliers.	echnology sstance, if outer box and or devices in rantee the iers. Supplier Information		Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight 100.00	
empliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this dd y, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 fl p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information eir original packing materials is true and correct to the bese mpleteness and accuracy of data in this form because it for- ormation is often protected from disclosure as trade secr provided only as estimates of the average weight of these	emical substance is NOT an intent ocument, there is no credible reaso y regulatory scheme world-wide. ammability standard for plastics. N Is/plastics/ ped are made from polyvinyl chlor n in this form concerning substance st of its knowledge and belief, as o nas been compiled based on the ra rets and some information may not o parts and the average weight of a d within silicon devices (silicon IC arranty, express or implied, with re	ier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concen You can access the UL iQTM family of databases to ide (PVC) plastic. "Window envelopes" used to ho ces restricted by RoHS in Microchip Technology In f the date listed in this form. Microchip Technology inges provided in Material Safety Data Sheets prov t have been provided by subcontract assemblers a unicipated significant toxic metals components. TI) in the finished parts. espect to the information provided in this declarati	to the best o attration of the o obtain a tes old the packin accorporated's y Incorporate ided by raw r and raw mater hese estimate ion. The exclu	of Microchip Te e chemical sub it report at ing slip on the of semiconduct ed cannot gua material suppliers. ses do not inclu usive, limited j	echnology stance, if outer box and or devices in rantee the iers. Supplier Information ide trace product		Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
npliance with the above EU Directives has been verified chemical substance is absent from the list above, the chorporated's knowledge and belief as of the date of this date, is not below the threshold of regulatory concern for any iding compounds used by Microchip meet the UL94 V0 floot/Jul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the ber protection and accuracy of data in this form because it h romation is often protected from disclosure as trade secr rovided only as estimates of the average weight of these als of dopants, metals, and non-metal materials containe rochip Technology Incorporated does not provide any w ranties provided by Microchip Technology Incorporated	emical substance is NOT an intent ocument, there is no credible reaso y regulatory scheme world-wide. ammability standard for plastics. I Is/plastics/ ped are made from polyvinyl chlor n in this form concerning substand st of its knowledge and belief, as o has been compiled based on the ra rets and some information may not e parts and the average weight of a d within silicon devices (silicon IC varranty, express or implied, with ro and its subsidiaries are contained changes to Material Content Declar the users' reliance on the informatic	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concen You can access the UL IQTM family of databases to ide (PVC) plastic. "Window envelopes" used to ho ces restricted by RoHS in Microchip Technology In if the date listed in this form. Microchip Technology In if the date listed in this form. Microchip Technology In the been provided by subcontract assemblers a unticipated significant toxic metals components. TI) in the finished parts. espect to the information provided in this declarati in Microchip's standard terms and conditions of s rations and shall not be liable for any damages, dir	to the best o htration of the o obtain a tes o obtain a tes d the packin corporated's y Incorporate ided by raw r ind raw mater hese estimate ion. The exclu- iale. These ar ect or indirec	of Microchip Te e chemical sub at report at g slip on the of semiconduct d cannot gua material suppliers. as do not inclu usive, limited in te provided in ct, consequent	echnology stance, if outer box and or devices in rantee the iers. Supplier Information ide trace product Microchip's ital or	1.29	(mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 % of Total Weight 100.00	0.28

AICROCHIP Semiconductor Devic	e Type: EKE 48 TS	OP 12x20mm (W9)		nation Base opper Alloy ((-		Ũ	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Total			377.31	(mg) Total	Mold Compound	% ot Total Weight	66.84
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	511.51	(3,			
Silica, vitreous (or fused)	60676-86-0	Mold Compound	56.814	320.715	568,140		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.815	32.826	58,151		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.010	22.639	40,104		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.201	1.132	2,005		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	26.982	152.312	269,818			Total		
Nickel	7440-02-0	Lead Frame	0.720	4.062	7,196	159.92	(mg) Total	Lead Frame	% of Total Weight	28.33
Silicon	7440-21-3	Lead Frame	0.127	0.720	1,275		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.028	0.160	283		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.473	2.669	4,728		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.304	1.716	3,040		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade Secret	Die Attach	0.065	0.365	646		Silver	7440-22-4	1.67	
Copper	7440-50-8	Die Attach	0.011	0.064	114			Total	100.00	-
Silicon	7440-21-3	Chip (Die)	1.380	7.790	13,800	2.15	(mg) Total	Die Attach	% of Total Weight	0.38
Doped Gold	7440-57-5	Wire Bond	0.320	1.806	3,200		Silver	7440-22-4	80.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.750	15.524	27,500		Epoxy Resin	Trade Secret	17.00	
		TOTALS:	100.000	564.500	1,000,000		Copper	7440-50-8	3.00	
		IOTALS:	100.000							
semiconductor device and its homogenous materials		g Total Mass				7 70	(mg) Total	Total		4 29
s semiconductor device and its homogenous materials o Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directi npliance with the above EU Directives has been verified	comply with EU Directive 20 ve).	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/E	U (RoHS Red			7.79	(mg) Total Silicon	Total Chip (Die) 7440-21-3	% of Total Weight	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directi	comply with EU Directive 20 ve). via internal design controls nemical substance is NOT a date of this document, there	g Total Mass 102/95/EC (RoHS Directive), EU Directive 2011/65/E s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi e is no credible reason to believe that the unavoida	U (RoHS Red I. ce and, to th	cast Directive) le best of Micr	and with	7.79	,	Total Chip (Die)	% of Total Weight	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directi npliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl hnology Incorporated's knowledge and belief as of the	comply with EU Directive 20 via internal design control: nemical substance is NOT a date of this document, therr gulatory concern for any re lammability standard for pla	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/E s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi e is no credible reason to believe that the unavoida egulatory scheme world-wide.	U (RoHS Red I. ce and, to th able impurity	cast Directive) le best of Micr concentration	and with rochip n of the	7.79	,	Total Chip (Die) 7440-21-3	% of Total Weight	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directi npliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl hnology Incorporated's knowledge and belief as of the e mical substance, if any, is not below the threshold of re ding compounds used by Microchip meet the UL94 V0 f	comply with EU Directive 20 via internal design controls nemical substance is NOT date of this document, there gulatory concern for any re lammability standard for pla uls/plastics/	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/E s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi e is no credible reason to believe that the unavoida egulatory scheme world-wide. astics. You can access the UL iQTM family of datab	U (RoHS Red I. ce and, to th able impurity pases to obta	cast Directive) le best of Micr concentration ain a test repo	ochip n of the rt at		Silicon	Total Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directin npliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl hnology incorporated's knowledge and belief as of the e mical substance, if any, is not below the threshold of re ding compounds used by Microchip meet the UL94 V0 f :://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship	comply with EU Directive 20 via internal design controls nemical substance is NOT a date of this document, therr gulatory concern for any re lammability standard for pla ls/plastics/ uped are made from polyvin c. n in this form concerning s ct to the best of its knowled n this form because it has b ted from disclosure as trad	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/E s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi e is no credible reason to believe that the unavoida gulatory scheme world-wide. astics. You can access the UL iQTM family of data lyl chloride (PVC) plastic. "Window envelopes" use ubstances restricted by RoHS in Microchip Technol age and belief, as of the date listed in this form. Mic peen compiled based on the ranges provided in Ma e secrets and some information may not have been eight of these parts and the average weight of anti	U (RoHS Red ce and, to the ble impurity bases to obta d to hold the clogy Incorp crochip Tech terial Safety cipated sign	cast Directive) e best of Micr concentration ain a test repo a packing slip porated's semii mology Incorp Data Sheets j y subcontract ificant toxic m	and with ochip n of the rt at on the conductor provided by assemblers ietals		Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight 100.00	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directi npliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl hnology Incorporated's knowledge and belief as of the e ding compounds used by Microchip meet the UL94 V0 f c://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship er box and certain "reels" may be made from PVC plasti rochip Technology Incorporated believes the informatio ices in their original packing materials is true and corree not guarantee the completeness and accuracy of data is material suppliers. Information is provided only as	comply with EU Directive 20 via internal design controls nemical substance is NOT a date of this document, therr gulatory concern for any re lammability standard for pla ls/plastics/ uped are made from polyvin c. n in this form concerning s ct to the best of its knowled n this form because it has b ted from disclosure as trad fopants, metals, and non- varranty, express or implied rporated and its subsidiarie	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/E s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi e is no credible reason to believe that the unavoida egulatory scheme world-wide. astics. You can access the UL iQTM family of datak up chloride (PVC) plastic. "Window envelopes" use ubstances restricted by RoHS in Microchip Techno ige and belief, as of the date listed in this form. Mic been compiled based on the ranges provided in Ma e secrets and some information may not have beer eight of these parts and the average weight of anti- metal materials contained within silicon devices (s d, with respect to the information provided in this d	U (RoHS Red ce and, to th ble impurity pases to obta d to hold the plogy Incorp rochip Tech terial Safety cipated sign ilicon IC) in t eclaration. T	cast Directive) e best of Micr concentration ain a test repo packing slip pata Sheets j Data Sheets j y subcontract ificant toxic m the finished p	and with ochip n of the rt at on the conductor porated provided by assemblers netals arts. limited		Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	

MICROCHIP				nation Base A pper Alloy (C			•	ogeneous Materials: .g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: AB 03 (Lead) TO-22	20 (F8)								e3
		"Contained In"	% I otal			536.44	(mg) Total	Mold Compound	% ot Total Weight	28.38
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm					20.00
Fused Silica	60676-86-0	Mold Compound	24.974	472.066	249,744		Fused Silica	60676-86-0	88.00	
Epoxy Resin 1	Trade Secret	Mold Compound	0.922	17.434	9,224		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	0.851	16.093	8,514		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.277	24.140	12,771		Phenol Resin	Trade Secret	4.50	
Carbon Black Misc.	1333-86-4 Trade Secret	Mold Compound Mold Compound	0.071 0.284	1.341 5.364	710 2,838		Carbon Black	1333-86-4	0.25	
	7440-50-8		68.874	1301.860	2,030		Undeclared	Trade Secret		
Copper		Lead Frame	0.116			1000.00	() - ()	Total	100.00	
Tin	7440-31-5	Lead Frame		2.193	1,160	1329.38	(mg) Total	Lead Frame	% of Total Weight	70.33
Silver	7440-22-4	Lead Frame	1.340	25.325	13,398		Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.063	1.187	628		Tin	7440-31-5	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.015	0.280	148	l l	Silver	7440-22-4	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.002	0.045	24			Total	100.00	
Silicon	7440-21-3	Chip (Die)	0.600	11.341	6,000	1.51	(mg) Total	Die Attach	% of Total Weight	0.08
Gold	7440-57-5	Wire Bond	0.050	0.945	500		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5 Plating o	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.560	10.585	5,600		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	1,890.200	1,000,000	Proprietar	/ Curing agent & Hardener	Trade Secret	3	
	1.8902 g Tot	tal Mass						Total	100.00	
semiconductor device and its homogenous materials co	omply with EU Directive 2002/95/	EC (RoHS Directive), EU Directive 2011/65/EU (RoH	IS Recast Direct	ctive) and with	EU	11.34	Total (mg)	Chip (Die)	% of Total Weight	0.6
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
								,	-	0.0
chemical substance is absent from the list above, the che	emical substance is NOT an inter	ntional ingredient in the semiconductor device and					Doped Silicon	7440-21-3 Total	100 100.00	0.0
chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this doo , is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fla	emical substance is NOT an inter cument, there is no credible reas regulatory scheme world-wide. mmability standard for plastics.	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce	ntration of the	chemical subs		0.95		7440-21-3	100	0.05
chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this dor , is not below the threshold of regulatory concern for any lding compounds used by Microchip meet the UL94 V0 fla s://ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp	emical substance is NOT an inter cument, there is no credible reas regulatory scheme world-wide. mmability standard for plastics. /plastics/	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce You can access the UL iQTM family of databases t	ntration of the	chemical subs	tance, if	0.95	Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
ic chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this doo y, is not below the threshold of regulatory concern for any liding compounds used by Microchip meet the UL94 V0 fla p://ul.com/global/eng/pages/offerings/industries/chemicals a protective "tubes" in which the specific product is shippi tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information if original packing materials is true and correct to the best mpleteness and accuracy of data in this form because it ha normation is often protected from disclosure as trade secre voided only as estimates of the average weight of these pai	emical substance is NOT an inter cument, there is no credible reas regulatory scheme world-wide. mmability standard for plastics. s/plastics/ ed are made from polyvinyl chlo in this form concerning substan t of its knowledge and belief, as as been compiled based on the r ts and some information may no rts and the average weight of an	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce You can access the UL iQTM family of databases t ride (PVC) plastic. "Window envelopes" used to he nees restricted by RoHS in Microchip Technology II of the date listed in this form. Microchip Technolog anges provided in Material Safety Data Sheets pro ot have been provided by subcontract assemblers	ntration of the co obtain a test old the packing ncorporated's : gy Incorporate vided by raw m and raw materi	chemical subs report at g slip on the ou semiconducto d cannot guara aterial suppliers. Ir	tance, if ter box and r devices in ntee the rs. Supplier iformation is	0.95	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
mpliance with the above EU Directives has been verified vi to chemical substance is absent from the list above, the che corporated's knowledge and belief as of the date of this door y, is not below the threshold of regulatory concern for any liding compounds used by Microchip meet the UL94 V0 fla p://ul.com/global/eng/pages/offerings/industries/chemicals e protective "tubes" in which the specific product is shipp rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information sir original packing materials is true and correct to the best mpleteness and accuracy of data in this form because it ha ormation is often protected from disclosure as trade secre svided only as estimates of the average weight of these par dopants, metals, and non-metal materials contained within crochip Technology Incorporated does not provide any wa rranties provided by Microchip Technology Incorporated a otations, sales order acknowledgement, and invoices.	emical substance is NOT an inter- cument, there is no credible reas regulatory scheme world-wide. mmability standard for plastics. s/plastics/ ed are made from polyvinyl chlo in this form concerning substar t of its knowledge and belief, as as been compiled based on the r ts and some information may no rts and the average weight of an s silicon devices (silicon IC) in th urranty, express or implied, with i	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce You can access the UL iQTM family of databases t ride (PVC) plastic. "Window envelopes" used to he neces restricted by RoHS in Microchip Technology I of the date listed in this form. Microchip Technology I of the date listed in this form. Microchip Technology I thave been provided by subcontract assemblers a tricipated significant toxic metals components. The refinished parts.	ntration of the co obtain a test old the packing ncorporated's : gy Incorporate vided by raw m and raw materi ase estimates o tion. The exclu	chemical subs report at g slip on the ou semiconducto d cannot guara aterial supplie al suppliers. Ir lo not include sive, limited p	tance, if ter box and r devices in ntee the rs. Supplier iformation is irace levels roduct	0.95	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this door v, is not below the threshold of regulatory concern for any lding compounds used by Microchip meet the UL94 V0 fla o://ul.com/global/eng/pages/offerings/industries/chemicals a protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information ir original packing materials is true and correct to the best mpleteness and accuracy of data in this form because it ha ormation is often protected from disclosure as trade secre vided only as estimates of the average weight of these pai oppants, metals, and non-metal materials contained within crochip Technology Incorporated does not provide any wa rranties provided by Microchip Technology Incorporated a	emical substance is NOT an inter- cument, there is no credible reas regulatory scheme world-wide. mmability standard for plastics. s/plastics/ ed are made from polyvinyl chlo- in this form concerning substan t of its knowledge and belief, as as been compiled based on the r ts and some information may no rts and the average weight of an s silicon devices (silicon IC) in th urranty, express or implied, with a and its subsidiaries are contained pages to Material Content Decla	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce You can access the UL iQTM family of databases t wide (PVC) plastic. "Window envelopes" used to he neces restricted by RoHS in Microchip Technology I of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets pro to have been provided by subcontract assemblers. Iticipated significant toxic metals components. The le finished parts. respect to the information provided in this declarar d in Microchip's standard terms and conditions of arations and shall not be liable for any damages, di	ntration of the oobtain a test old the packing ncorporated's : gy Incorporate vided by raw m and raw materi ase estimates of tion. The exclu sale. These are rect or indirect	chemical subs report at g slip on the ou semiconducto d cannot guara naterial suppliers. Ir aterial suppliers. Io not include sive, limited p e provided in N	tance, if ter box and r devices in intee the rs. Supplier formation is irace levels oduct icrochip's al or		(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100 100.00 % of Total Weight 100 100.00	0.05
chemical substance is absent from the list above, the che orporated's knowledge and belief as of the date of this door r, is not below the threshold of regulatory concern for any lding compounds used by Microchip meet the UL94 V0 fla o://ul.com/global/eng/pages/offerings/industries/chemicals e protective "tubes" in which the specific product is shippi- tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information ir original packing materials is true and correct to the best mpleteness and accuracy of data in this form because it ha protention is often protected from disclosure as trade secre vided only as estimates of the average weight of these pai dopants, metals, and non-metal materials contained within crochip Technology Incorporated does not provide any wa rranties provided by Microchip Technology Incorporated a otations, sales order acknowledgement, and invoices.	emical substance is NOT an inter- cument, there is no credible reas regulatory scheme world-wide. mmability standard for plastics. s/plastics/ ed are made from polyvinyl chlo- in this form concerning substan t of its knowledge and belief, as as been compiled based on the r ts and some information may no rts and the average weight of an s silicon devices (silicon IC) in th urranty, express or implied, with a and its subsidiaries are contained pages to Material Content Decla	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce You can access the UL iQTM family of databases t wide (PVC) plastic. "Window envelopes" used to he neces restricted by RoHS in Microchip Technology I of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets pro to have been provided by subcontract assemblers. Iticipated significant toxic metals components. The le finished parts. respect to the information provided in this declarar d in Microchip's standard terms and conditions of arations and shall not be liable for any damages, di	ntration of the oobtain a test old the packing ncorporated's : gy Incorporate vided by raw m and raw materi ase estimates of tion. The exclu sale. These are rect or indirect	chemical subs report at g slip on the ou semiconducto d cannot guara naterial suppliers. Ir aterial suppliers. Io not include sive, limited p e provided in N	tance, if ter box and r devices in intee the rs. Supplier formation is irace levels oduct icrochip's al or		(mg) Total (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00	0.05

Basic Substance CASE Number Contrained into Y. 1081 mgs/m ppm 58.52 (mg) Total Mod Compound Y. et Total Waige 25.50 Fland Siles 60/07.86.0 Mod Compound 10/07.86.0 60/07.86.0 70/07.0 70/07.0 70/07.0 70/07.0 70/07.0 70/07.0 70/07.0 70/07.0 70/07.0 70/07.0 70/07.0 70/07.0 70/07.0 70/07.0 70/0	Semiconductor Device	Гуре: AT 05 (Lead	i) TO-220 (вя)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling e3
Fund Status 6007/99/01 Mod Compound 23.72 405.09 400.0 <th></th> <th>CAS Number</th> <th></th> <th></th> <th>malaart</th> <th></th> <th>526.92</th> <th>(mg) Total</th> <th>Mold Compound</th> <th>% ot Total Weight</th> <th>26.56</th>		CAS Number			malaart		526.92	(mg) Total	Mold Compound	% ot Total Weight	26.56
Epop Rein 1 Trade Serier Model Compound 0.883 17.128 6.892 Epop Rein 1 Trade Serier Model Compound 0.783 15.864 Trade Serier 32.64 Male Trade Serier Model Compound 0.786 5.867 7.65 7.75 7.65 7.75 7.65 7.65 7.75 7.65 7.75 7.65 7.75 7.65 7.75 7.75 7.65 7.75 7.75 7.65 <td></td> <td></td> <td>•</td> <td>•</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>-</td> <td>1</td>			•	•					-	-	1
Egocy Rem 2 Trade Sector Model Compound 0.797 15.898 7.988 Hard Nami Trade Sector Model Compound 0.787 15.898 7.988 Comport Trade Sector Model Compound 0.786 2.378 2.688 1.028 1.00											
Image Trade Scoret Mod Compound 1.156 23.712 11.852 22.712 11.852 Description Accord and the scored in the score in the scored in the score in the											
Carbon Black 1333-86-4 Modi Compound 0.066 1.317 644 Micc. Trade Boret Modi Compound 0.056 5.267 2.657 Copper 7449-516 Lead Frame 7.027 1420 7.027 1430.79 0.038 0.039 Shur 7.449-214 Lead Frame 7.017 17.079 0.037 1.240.79 0.037 0.03											
Misc Total Secret Modi Compound 0.288 5.289 2.686 Undecland Total 100 Th 7440-254 Laad Frame 0.119 2.301 1.100 140.77 740.71											
Copper 7440-50-8 Lead Frame 70.827 Lead Frame 70.827 Share (A) 7440-52-4 Lead Frame 1.374 27.257 1.37.9 Copper 7440-52-4 Formality (A) 74.12 27.257 1.37.9 Copper 7440-52-4 Formality (A) 74.02										e.=e	
In 7440 315 Lead Frame 0.110 2.811 1190 1490 79 (reg) Total Lead Frame 5.72 12 Silver 7440 324 Lead Frame 0.071 1.327 1.373 1.374 27.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.37 1.374 77.47 77.42 77.42 77.42 77.42 77.42 77.42 77.42 77.42 77.42 77.42 77.43 77.42 77.43 77.42 77.43 77.42 77.43 77.42 77.43 77.42 77.43 77.43 77.43 77.43 77.43 77.43 77.42 77.43 77.43 77.43 77.43 77.43 77.43 77.44 77.44 77.44 77.44 77.44 77.44 77.44 77.44 77.44 77.44 77.44 77.44 77.44 77.44 77.44								Ondeciared			l
Silver 7440-224 Lead Frame 1.374 27.277 13.739 The second s							1420 70	(ma) Total			72.12
Silver (Ap) 7440-52-4 Die Attach 0.071 1.442 7707 Proprietary (Kein) Trade Secret Die Attach 0.017 1.442 7707 Proprietary (Kein) Trade Secret Die Attach 0.017 0.030 0.054 2.7 Total							1430.75				72.12
Proprietary Rean Trade Secret Die Attach 0.017 0.38 167 Proprietary Curring gents Haidener Trade Secret Die Attach 0.054 2.7 Trade Secret 0.058 2.7 Silicon 7440-21-3 Child (Die) 0.054 2.70 1.75 trade Total 7.63 7.60 9.6 7.74 7.60 7.74											
Proprietry Curreg agent & Hardner Trade Total											
Billion 7440-21-3 Chip (Die) 0.620 12.300 6.200 1.79 Img Total Net Total Weight 0.69 Gid 7440-51-5 Wire Bond 0.040 0.744 400 1.79 Img Total 7440-22-4 78 Tin 7440-51-5 Parago exeamal loads (gau)- Males Tri / amweekd at 150°C for 1 tou 0.570 11.308 5.700 Proprietary Central Amage 10 7440-21-3 10 7440-21-3 10 7440-21-3 10 7440-21-3 10 7440-21-3 10 7440-21-3 10 7440-21-3 10 7440-21-3 10 7440-21-3 10 7440-21-3 10 7440-21-3 10 7440-21-3 10 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100 7440-21-3 100								Silver			
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Tim 7440-315 Putty on referential less (provide 1 station Time services of the transmitted at 150°C tor 1 tool 0.5700 11.303 6.7000 TOTALS: 100.000 1.983.300 1.000.000 1.983.300 1.000.000 Semiconductor devices and its homogenous materials comply with EU Directive 2002/55/EC (RoHS Directive). EU Directive 2017/65/EU (RoHS Recast Directive) and with EU 12.30 Total 100.00 Joint Mass Total 100.00 Total 100.00 Joint Mass Total 100.00 Joint Mass Total 100.00 Joint Mass Joint							1.79				0.09
TOTALS: 100.000 1,983.900 1,000.000 1,983.900 1,000.000 Total Total 100.00 Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/85/EU (ROHS Recast Directive) and with EU 12.30 Total Total 0.622 Dirace with the above EU Directives, has been verified via internal design controls, supplier declarations, and /or analytical test data. 12.30 Total (mg) Chip (Die) % of Total Weight 0.622 Dirace with the above EU Directives, buschene verified via internal design controls, supplier declarations, and /or analytical test data. 100.00 <td></td>											
1.9839 g Total Mass Total semiconductor device and its homogenous materials comply with EU Directive 2002/SFC (End-of-Life Vehicles (ELV) Directive). 12.30 Total (mg) Chip Ole) % of Total Weight 0.62 plance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Doped Silicon 7440-21-3 100.00 yotad 100.00 % of Total Weight 0.62 protective "there is no credite reason to believe that the unavoidable impurity concernation of the chemical substance, if is not below the threshold of regulatory concern for any regulatory scheme world-wide. 100.00 7440-21-3 100.00 ing compounds used by Microchy Technology incorporated believes the information in this form polyvinyl chloride (PVC) plaste. "Window envelopes" used to hold the packing slip on the outer box and in "reals" may be made from PVC plaste. 0.73 (mg) Total Wire Bond % of Total Weight 0.04 orderative "there is no creditive studies and the approximation in this form concerning substances restricted by ROFS in Nicrochy Technology incorporated believes the information in this form. Nicrochy Technology incorporated believes the information in this form concerning substances is a directive the substance is a directive to the best of its Knowledge and belief as of the date stills on this form. Nicrochy Technology incorporated believes the average weight of anticipate significant toxic metals components. These estimates do not include trace levels achterio technology incorporated does not provided any warranty, express or implied, wit	Tin	7440-31-5								-	
the security of the secur				100.000	1,983.900	1,000,000	Proprietar	Curing agent & Hardener		-	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Total (mg) Chip (Die) % of Total Weigh 0.52 12.30 Total (mg) Chip (Die) % of Total Weigh 0.52 12.30 Total (mg) Chip (Die) % of Total Weigh 0.52 12.30 Total (mg) Chip (Die) % of Total Weigh 0.52 12.30 Total (mg) Chip (Die) % of Total Weigh 0.52 12.30 Total (mg) Chip (Die) % of Total Weigh 0.52 12.30 Total (mg) Chip (Die) % of Total Weigh 0.52 12.30 Total (mg) Chip (Die) % of Total Weigh 0.52 12.30 Total (mg) Chip (Die) % of Total Weigh 0.52 12.30 Total (mg) Chip (Die) % of Total Weigh 0.52 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 11.31 (mg) Total 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.52 100.00 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.52 100.00 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.52 100.00 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.52 100.00 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.57 total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.57 total 100.00 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.57 total 100.00 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.57 total 100.00 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.57 total 100.00 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.57 total 100.00 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.57 total 100.00 11.31 (mg) Total Plating on external leads (pins) - Matter Tin/ anneals at Stor Chip (Total Weigh 0.57 total 100.00 11.3		1.9839	g Total Mass						Total	100.00	
s not below the threshold of regulatory concern for any regulatory scheme world-wide. ng compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ulcomglobaleng/pages/offerings/industries/chemicals/plastics/ rotective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and n"rels" may be made from PVC plastic. chip Technology Incorporated believes the information in this form. Encorphic to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's semiconductor devices in nation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Suppliers to full the average weight of anticipated significant toxic metals components. These estimates do not include trace levels chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's totiss, sales order acknowledgement, and invoices. chip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or wise, suffred by users of third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or s certificate of Compliance for semiconductor products.	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			IS Recast Direc	tive) and with	EU	12.30		,	-	0.62
in "reels" may be made from PVC plastic. Doped Gold 740-57-5 100 Doped Gold 740-57-5 100	:tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vi hemical substance is absent from the list above, the cheir	a internal design controls	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and,	, to the best of	Microchip Tec	hnology	12.30		7440-21-3	100	0.62
bochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in pleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier mation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is ided only as estimates of the average weight of these parts and the subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's that the average to the information may and have been and and the average to the information may and the average to the information in Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or moving and at the average to the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5 100.00	stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vi hemical substance is absent from the list above, the chei porated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL94 V0 flar	a internal design control: nical substance is NOT a ument, there is no credit regulatory scheme world nmability standard for pl	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide.	, to the best of ntration of the	Microchip Teo chemical subs	hnology		Doped Silicon	7440-21-3 Total	100 100.00	
Description	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vi hemical substance is absent from the list above, the cher porated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL94 V0 flar //ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shippe	a internal design control: mical substance is NOT a ument, there is no credit regulatory scheme world nmability standard for pl /plastics/	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases t	, to the best of ntration of the o obtain a test	Microchip Tec chemical subs report at	hnology tance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
rwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Tin 7440-31-5 100.00 is Certificate of Compliance for semiconductor products.	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vi hemical substance is absent from the list above, the cher rporated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any i ling compounds used by Microchip meet the UL94 V0 flar //ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipped in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information original packing materials is true and correct to the best pleteness and accuracy of data in this form because it ha mation is often protected from disclosure as trade secret ided only as estimates of the average weight of these par	a internal design control: mical substance is NOT a sument, there is no credit regulatory scheme world mmability standard for pl /plastics/ ad are made from polyvin in this form concerning s of its knowledge and bel s been compiled based o s and some information t and the average weigf	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir ief, as of the date listed in this form. Microchip Technolog n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	, to the best of ntration of the o obtain a test old the packing ncorporated's : ny Incorporated vided by raw m and raw materi	Microchip Tec chemical subs report at slip on the ou semiconductor d cannot guara aterial suppliers. Ir	thnology tance, if ter box and r devices in intee the rs. Supplier formation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
Total 100.00	stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vi hemical substance is absent from the list above, the cher prorated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL94 V0 flar //ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shippe in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information i original packing materials is true and correct to the best pleteness and accuracy of data in this form because it ha mation is often protected from disclosure as trade secret ided only as estimates of the average weight of these par opants, metals, and non-metal materials contained within occhip Technology Incorporated does not provide any waa anties provided by Microchip Technology Incorporated a	a internal design control: mical substance is NOT a sument, there is no credit regulatory scheme world mmability standard for pl /plastics/ ad are made from polyvin in this form concerning s of its knowledge and bel s been compiled based o s and some information its and the average weigf silicon devices (silicon lu ranty, express or implied	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, be reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir ief, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts.	, to the best of htration of the o obtain a test old the packing ncorporated's : gy Incorporated vided by raw m and raw materi se estimates d	Microchip Tec chemical subs report at slip on the ou semiconductoo d cannot guara aterial supplie al suppliers. Ir o not include	thnology tance, if r devices in intee the rs. Supplier iformation is trace levels roduct	0.79	Coped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.04
	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vi hemical substance is absent from the list above, the cher prorated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL94 V0 flar //ul.com/global/eng/pages/offerings/industries/chemicals. protective "tubes" in which the specific product is shippe in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information i original packing materials is true and correct to the best pleteness and accuracy of data in this form because it ha mation is often protected from disclosure as trade secret ided only as estimates of the average weight of these par pants, metals, and non-metal materials contained within ochip Technology Incorporated does not provide any war anties provided by Microchip Technology Incorporated a attions, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or ch rwise, suffered by users or third parties as a result of the	a internal design control: mical substance is NOT a regulatory scheme world mmability standard for pl /plastics/ ad are made from polyvin in this form concerning s of its knowledge and bel s been compiled based o s and some information ts and the average weigh silicon devices (silicon la rranty, express or implied nd its subsidiaries are co anges to Material Conten users' reliance on the inf	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, be reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir ief, as of the date listed in this form. Microchip Technology Ir n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts. I, with respect to the information provided in this declarat ntained in Microchip's standard terms and conditions of a t Declarations and shall not be liable for any damages, dii	, to the best of htration of the o obtain a test old the packing hcorporated's i yy Incorporated yided by raw m and raw materi se estimates d ion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at slip on the ou semiconductor d cannot guara aterial suppliers. Ir o not include i sive, limited pr provided in M , consequentia	thnology tance, if ter box and r devices in intee the rs. Supplier formation is trace levels roduct licrochip's al or	0.79	Coped Silicon (mg) Total Doped Gold (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.04

MICROCHIP Semiconductor Device	PType: PT 32 (Lead) T	'QFP 7x7x1mm (T5)		ation Base A oper Alloy (C			•	ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	269.96	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	229,469	678.300		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	6,943	23.487	69.426		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.788	16.198	47.880		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.810	2.394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.229	34.603	102.286			Total	100.00	
Tin	7440-31-5	Lead Frame	0.026	0.089	263	35.52	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.677	2.000	00.02	Copper	7440-50-8	97.42	10.0
Zinc	7440-66-6	Lead Frame	0.019	0.064	189		Tin	7440-30-0	0.25	
Chromium	7440-00-0	Lead Frame	0.019	0.089	263		Silver	7440-31-5	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.623	2.106	6.225		Zinc	7440-22-4	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.023	0.228	675		Chromium	7440-00-0	0.18	
EPOXY RESIN	Trade Secret	Die Attach	0.060	0.203	600		Onionium	Total	100.00	1
Silicon	7440-21-3	Chip (Die)	7.500	25.373	75,000	2.54	(mg) Total	Die Attach	% of Total Weight	0.75
	7440-21-3		0.200	0.677		2.54				0.75
Gold Tin		Wire Bond	1.250	4.229	2,000 12,500		Silver (Ag) ANHYDRIDE	7440-22-4 Trade Secret	83	
181	7440-31-5 P	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.000	4.229 338.300	1,000,000			Trade Secret	9	
		TOTALS:	100.000	336.300	1,000,000		EPOXY RESIN	Trade Secret	8 100.00	
mpliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this di y, is not below the threshold of regulatory concern for an olding compounds used by Microchip meet the UL94 V0 fl p/Jul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship	nemical substance is NOT an ocument, there is no credibl y regulatory scheme world-n lammability standard for pla ils/plastics/	intentional ingredient in the semiconductor device and e reason to believe that the unavoidable impurity concer wide. stics. You can access the UL iQTM family of databases t	ntration of the constant of th	chemical subs	stance, if	0.68	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.2
tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information ir original packing materials is true and correct to the be mpleteness and accuracy of data in this form because it h ormation is often protected from disclosure as trade secr vided only as estimates of the average weight of these p opants, metals, and non-metal materials contained withi	st of its knowledge and belie has been compiled based on rets and some information m parts and the average weight	ef, as of the date listed in this form. Microchip Technolog t the ranges provided in Material Safety Data Sheets pro- nay not have been provided by subcontract assemblers i of anticipated significant toxic metals components. The	gy Incorporated vided by raw m and raw materi	cannot guara aterial supplie al suppliers. Ir	antee the ers. Supplier nformation is			Total	100.00	
crochip Technology Incorporated does not provide any w arranties provided by Microchip Technology Incorporated totations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or o herwise, suffered by users or third parties as a result of th this Certificate of Compliance for semiconductor product	and its subsidiaries are con changes to Material Content he users' reliance on the info	tained in Microchip's standard terms and conditions of	sale. These are rect or indirect	provided in N consequentia	licrochip's al or	4.23	(mg) Total Tin	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	% of Total Weight 100.00	1.25
						338.30	0	Total	100.00	100.0

		7052		nation Base / opper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Markin and/or Pkg. Labeling
Semiconductor Device	Type: PT 44 (Lead)									e3
		"Contained In"	% Iotal			218.09	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	210.09	(iiig) rotai	word compound	% or rotal weight	19.0
Silica, vitreous	60676-86-0	Mold Compound	69.354	189.545	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	16.728	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	11.145	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.676	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.000	27.331	100,003			Total		
Nickel	7440-02-0	Lead Frame	0.267	0.729	2,667	28.70	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.175	0.479	1,752		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.129	473		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.011	0.029	105		Silver	7440-22-4	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.600	1.640	6,000		Silicon	7440-21-3	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.410	1,500		Magnesium	7439-95-4	0.10	
Silicon	7440-21-3	Chip (Die)	7.500	20.498	75,000			Total		
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.537	1,965	2.05	(mg) Total	Die Attach	% of Total Weight	0.75
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.010	35		Silver (Ag)	7440-22-4	80	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.416	12,500		Acrylate Urethane Oligome		20	
		TOTALS:	100.000	273.300	1,000,000	20.50		Total	100.00 % of Total Weight	7.5
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH Is, supplier declarations, and /or analytical test data.	S Recast Direc	ctive) and with	n EU		Doped Silicon	7440-21-3 Total	100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d	via internal design contro hemical substance is NOT locument, there is no credi	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer	to the best of	Microchip Te	chnology	0.55	Doped Silicon (mg) Total	Total Wire Bond palladium coated		0.2
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ing compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica	via internal design contro hemical substance is NOT locument, there is no credi ny regulatory scheme work lammability standard for p als/plastics/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL IQTM family of databases to	to the best of tration of the o obtain a test	Microchip Te chemical sub report at	chnology stance, if	0.55	(mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8	100.00 % of Total Weight 98	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica	via internal design contro hemical substance is NOT locument, there is no credi ny regulatory scheme work lammability standard for p als/plastics/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen J-wide.	to the best of tration of the o obtain a test	Microchip Te chemical sub report at	chnology stance, if	0.55	(mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. cochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because it I mation is often protected from disclosure as trade secr	via internal design contro hemical substance is NOT locument, there is no credi y regulatory scheme work lammability standard for p als/plastics/ opped are made from polyvi op in this form concerning has been compiled based rets and some information rats and the average weig	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The	to the best of tration of the o obtain a test Id the packing corporated's : y Incorporate ided by raw m	Microchip Te chemical sub: report at g slip on the o semiconducto d cannot guar- naterial suppli al suppliers. I	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is	0.55	(mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8	100.00 % of Total Weight 98 2	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified themical substance is absent from the list above, the ch rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. tochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because it I mation is often protected from disclosure as trade sec cided only as estimates of the average weight of these p opants, metals, and non-metal materials contained with ochip Technology Incorporated does not provide any w anties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices.	via internal design contro hemical substance is NOT locument, there is no credi y regulatory scheme work lammability standard for p als/plastics/ opped are made from polyvi on in this form concerning est of its knowledge and be has been compiled based rets and some information parts and the average weig in silicon devices (silicon warranty, express or implie I and its subsidiaries are co	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent -wide. Iastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts.	to the best of tration of the o obtain a test Id the packing corporated's a y Incorporate ided by raw m nd raw materi se estimates d on. The exclu ale. These are	Microchip Te chemical sub- report at g slip on the o semiconducto d cannot guar naterial supplie ial suppliers. I so not include sive, limited p s provided in N	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels vroduct Microchip's	0.55	(mg) Total Copper Palladium	Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.2
stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because it I mation is often protected from disclosure as trade sec ided only as estimates of the average weight of these p oppants, metals, and non-metal materials contained with Dochip Technology Incorporated does not provide any w anties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices.	I via internal design contro hemical substance is NOT locument, there is no credi ny regulatory scheme work lammability standard for p als/plastics/ opped are made from polyvi on in this form concerning test of its knowledge and be has been compiled based has been compiled based in silicon devices (silicon warranty, express or implie and its subsidiaries are co changes to Material Conte he users' reliance on the ir	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen d-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by ROHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts.	to the best of tration of the o obtain a test Id the packing corporated's : y Incorporate ided by raw m and raw materi se estimates d on. The exclu ale. These are ect or indirect	Microchip Te- chemical sub: report at g slip on the o semiconducto d cannot guar- naterial suppliers. I do not include sive, limited p p provided in M	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct dicrochip's al or		(mg) Total Copper Palladium	Total Wire Bond palladium coated copper (CuP4) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 98 2 100.00 % of Total Weight 100.00	

Semiconductor Devic	ce Type: 48 TQFP 7x7x1.4	JE		ination Base opper Alloy (-		•	nogeneous Materials: e.g. pc boards, displays))	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% I otal	T				1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	100.97	(mg) Total	Mold Compound	% ot Total Weight	57.27
Silica Fused	60676-86-0	Mold Compound	50.552	89.124	505.522		Silica Fused	60676-86-0	88.27	
Epoxy Resin	Trade Secret	Mold Compound	3.574	6,300	35,736		Epoxy Resin	Trade Secret	6.24	
Phenol Resin	Trade Secret	Mold Compound	2.972	5.240	29,723		Phenol Resin	Trade Secret	5.19	
Carbon Black	1333-86-4	Mold Compound	0.172	0.303	1.718		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	33.515	59.087	335.153		Garbon Black	Total	100.00	
Nickel	7440-02-0	Lead Frame	0.894	1.576	8,938	62.04	(mg) Total	Lead Frame	% of Total Weight	35.19
Silver	7440-22-4	Lead Frame	0.587	1.035	5.873	02.04	Copper	7440-50-8	95.24	33.19
Silicon	7440-22-4	Lead Frame	0.387	0.279	1.584		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.156	0.279	352		Silver	7440-02-0 7440-22-4	2.54	
Silver	7439-95-4 7440-22-4	Die Attach	0.035	1.640	9,300		Silicon	7440-22-4 7440-21-3	0.45	
Epoxy Resin	Trade secret	Die Attach	0.930	0.547	3,100		Magnesium	7440-21-3 7439-95-4	0.45	
			3.570	6.294			Wagnesium			
Silicon	7440-21-3	Chip (Die)			35,700			Total	100.00	
Gold	7440-57-5	Wire Bond	0.230	0.405	2,300	2.19	(mg) Total	Die Attach	% of Total Weight	1.24
Tin	7440-31-5 Pla	ting on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.500	4.408	25,000		Silver	7440-22-4	75.00	
		TOTALS:	100.000	176.300	1,000,000		Epoxy Resin	Trade secret	25.00	
	0.1763 a	Total Mass						Total	100.00	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Dir	rective).					6.29	(mg) Total	Chip (Die)		
a chemical substance is absent from the list abov	re, the chemical substance is N	trols, supplier declarations, and /or analytical test data OT an intentional ingredient in the semiconductor devi here is no credible reason to believe that the unavoida	ce and, to the				Doped Silicon	7440-21-3 Total	% of Total Weight 100 100.00	3.57
a chemical substance is absent from the list abov schnology Incorporated's knowledge and belief as nemical substance, if any, is not below the thresho olding compounds used by Microchip meet the U tp://ul.com/global/eng/pages/offerings/industries/	re, the chemical substance is N s of the date of this document, old of regulatory concern for ar L94 V0 flammability standard for chemicals/plastics/	OT an intentional ingredient in the semiconductor devi here is no credible reason to believe that the unavoida	ce and, to the ble impurity bases to obta	concentration ain a test repor	of the t at	0.41	(mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.23
a chemical substance is absent from the list abov echnology Incorporated's knowledge and belief as nemical substance, if any, is not below the thresho olding compounds used by Microchip meet the U ttp://ul.com/global/eng/pages/offerings/industries/	re, the chemical substance is N s of the date of this document, old of regulatory concern for ar L94 V0 flammability standard fo chemicals/plastics/ ct is shipped are made from poi	OT an intentional ingredient in the semiconductor devi here is no credible reason to believe that the unavoida y regulatory scheme world-wide. or plastics. You can access the UL IQTM family of data	ce and, to the ble impurity bases to obta	concentration ain a test repor	of the t at	0.41		7440-21-3 Total	100 100.00	
a chemical substance is absent from the list above echnology Incorporated's knowledge and belief as nemical substance, if any, is not below the thresho olding compounds used by Microchip meet the U ttp://ui.com/global/eng/pages/offerings/industries/ he protective "tubes" in which the specific produc ox and certain "reels" may be made from PVC plast icrochip Technology Incorporated believes the inf veices in their original packing materials is true an uarantee the completeness and accuracy of data in iaterial suppliers. Supplier information is provided only w material suppliers. Information is provided only	re, the chemical substance is N s of the date of this document, old of regulatory concern for ar L94 V0 flammability standard fr (chemicals/plastics/ t is shipped are made from poistic. formation in this form concernin d correct to the best of its kno n this form because it has been obtected from disclosure as trad y as estimates of the average w	OT an intentional ingredient in the semiconductor devi here is no credible reason to believe that the unavoida y regulatory scheme world-wide. or plastics. You can access the UL IQTM family of data	ce and, to the ble impurity bases to obta ed to hold the blogy Incorpo rochip Techn ifety Data Sh voided by sui ted significar	concentration ain a test repor e packing slip o orated's semic nology Incorpo eets provided bcontract asse nt toxic metals	of the t at on the outer onductor orated cannot by raw mblers and	0.41	(mg) Total	T440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight	
a chemical substance is absent from the list above echnology Incorporated's knowledge and belief as nemical substance, if any, is not below the threshe olding compounds used by Microchip meet the U try//ul.com/global/eng/pages/offerings/industries/ he protective "tubes" in which the specific produc ox and certain "reels" may be made from PVC plat icrochip Technology Incorporated believes the inf avices in their original packing materials is true an aurantee the completeness and accuracy of data in aterial suppliers. Supplier information is often pro- pomponents. These estimates do not include trace icrochip Technology Incorporated does not provide	re, the chemical substance is N s of the date of this document, old of regulatory concern for ar L94 V0 flammability standard for chemicals/plastics/ ct is shipped are made from poi stic. formation in this form concern nd correct to the best of its kno n this form because it has beer otected from disclosure as trad y as estimates of the average w levels of dopants, metals, and de any warranty, express or im ogy Incorporated and its subsis	OT an intentional ingredient in the semiconductor devi here is no credible reason to believe that the unavoida y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of datal yvinyl chloride (PVC) plastic. "Window envelopes" use ng substances restricted by RoHS in Microchip Techno wledge and belief, as of the date listed in this form. Mic compiled based on the ranges provided in Material So e secrets and some information may not have been pro eight of these parts and the average weight of anticipa	ce and, to the ble impurity bases to obta ad to hold the crochip Techn fety Data Sh ted significar silicon IC) in t	concentration ain a test repor e packing slip o orated's semic nology Incorpo eets provided bcontract asse the finished pa 'he exclusive, I	of the t at on the outer orductor orated cannot by raw mblers and rts. imited	0.41	(mg) Total	T440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
a chemical substance is absent from the list above echnology Incorporated's knowledge and belief as nemical substance, if any, is not below the thresho olding compounds used by Microchip meet the U try/lul.com/global/eng/pages/offerings/Industries/ he protective "tubes" in which the specific produc ox and certain "reels" may be made from PVC plast icrochip Technology Incorporated believes the inf veices in their original packing materials is true an uarantee the completeness and accuracy of data in aterial suppliers. Supplier information is often pro- w material suppliers. Information is provided only omponents. These estimates do not include trace icrochip Technology Incorporated does not provi roduct warranties provided by Microchip Technolo Microchip's quotations, sales order acknowledge icrochip disclaims any duty to notify users of upd	re, the chemical substance is N s of the date of this document, old of regulatory concern for an L94 V0 flammability standard fr chemicals/plastics/ ct is shipped are made from point stic. formation in this form concern nd correct to the best of its kno n this form because it has beer otected from disclosure as trad y as estimates of the average we levels of dopants, metals, and de any warranty, express or im ogy Incorporated and its subside ment, and invoices. lates or changes to Material Coo sult of the users' reliance on th	OT an intentional ingredient in the semiconductor devi here is no credible reason to believe that the unavoida y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of datal yvinyl chloride (PVC) plastic. "Window envelopes" use ng substances restricted by RoHS in Microchip Techno wledge and belief, as of the date listed in this form. Mic compiled based on the ranges provided in Material Sa e secrets and some information may not have been pro- eight of these parts and the average weight of anticipa non-metal materials contained within silicon devices (s biled, with respect to the information provided in this do	ce and, to the ble impurity bases to obtain ad to hold the blogy Incorport crochip Techn fety Data Sho by ded by sul ted significan silicon IC) in to leclaration. T d conditions of ges, direct of	concentration ain a test repor e packing slip o orated's semic nology Incorpo eets provided bcontract asse the finished pa 'he exclusive, I of sale. These r indirect, cons	of the t at on the outer orated cannot by raw mblers and rts. imited are provided sequential or		(mg) Total Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 100.00	0.23
chemical substance is absent from the list above chnology Incorporated's knowledge and belief as semical substance, if any, is not below the threshe iding compounds used by Microchip meet the U p/UI.com/global/eng/pages/offerings/industries/ e protective "tubes" in which the specific product x and certain "reels" may be made from PVC plat crochip Technology Incorporated believes the inf vices in their original packing materials is true an arantee the completeness and accuracy of data pro- tetral suppliers. Supplier information is often pro- v material suppliers. Information is provided only mponents. These estimates do not include trace crochip Technology Incorporated does not provide duct warranties provided by Microchip Technolo Microchip's quotations, sales order acknowledge crochip disclaims any duty to notify users of upd rerwise, suffered by users or third parties as a re-	re, the chemical substance is N s of the date of this document, old of regulatory concern for an L94 V0 flammability standard fr chemicals/plastics/ ct is shipped are made from point stic. formation in this form concern nd correct to the best of its kno n this form because it has beer otected from disclosure as trad y as estimates of the average we levels of dopants, metals, and de any warranty, express or im ogy Incorporated and its subside ment, and invoices. lates or changes to Material Coo sult of the users' reliance on th	OT an intentional ingredient in the semiconductor devi here is no credible reason to believe that the unavoida y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of datal yvinyl chloride (PVC) plastic. "Window envelopes" use mg substances restricted by RoHS in Microchip Techno wledge and belief, as of the date listed in this form. Mic compiled based on the ranges provided in Material Sa e secrets and some information may not have been pro ight of these parts and the average weight of anticipa non-metal materials contained within silicon devices (s plied, with respect to the information provided in this d liaries are contained in Microchip's standard terms and noted the contained of the secret of the secret of the substance of the secret plied of the secret to the information provided in this d liaries are contained in Microchip's standard terms and not the colarations and shall not be liable for any dama	ce and, to the ble impurity bases to obtain ad to hold the blogy Incorport crochip Techn fety Data Sho by ded by sul ted significan silicon IC) in to leclaration. T d conditions of ges, direct of	concentration ain a test repor e packing slip o orated's semic nology Incorpo eets provided bcontract asse the finished pa 'he exclusive, I of sale. These r indirect, cons	of the t at on the outer orated cannot by raw mblers and rts. imited are provided sequential or		(mg) Total Gold (mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100.00 100.00 % of Total Weight	0.23

MICROCHIP Semiconductor Device	e Type: P'	64 (Lead) TQFP 10x10x1mm (V2/VG)		ation Base / oper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Markir and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	228.79	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	198.838	693.542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	17.548	61.207		Epoxy Resin	Trade Secret	7.67	I
Phenolic Resin	Trade Secret	Mold Compound	4.078	11.691	40,778		Phenolic Resin	Trade Secret	5.11	1
Carbon Black	1333-86-4	Mold Compound	0.247	0.709	2.474		Carbon Black	1333-86-4	0.31	l
Copper	7440-50-8	Lead Frame	10.000	28.671	100.003			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.267	0.765	2.667	30.10	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.175	0.502	1,752	00110	Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.135	473		Nickel	7440-02-0	2.54	l
Magnesium	7439-95-4	Lead Frame	0.011	0.030	105		Silver	7440-22-4	1.67	1
Silver (Ag)	7440-22-4	Die Attach	0.600	1.720	6,000		Silicon	7440-21-3	0.45	1
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.430	1,500		Magnesium	7439-95-4	0.10	1
Silicon	7440-21-3	Chip (Die)	7.500	21.503	75.000		¥	Total	100.00	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.563	1,965	2.15	(mg) Total	Die Attach	% of Total Weight	0.75
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.010	35		Silver (Ag)	7440-22-4	80	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.584	12,500		Acrylate Urethane Oligome	General	20	l
		TOTALS:	100.000	286.700	1.000.000			Total	100.00	
	0.2867	g Total Mass			.,,	21.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
	s comply with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	Recast Direc	tive) and with	EU		Doped Silicon	7440-21-3	100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive npliance with the above EU Directives has been verifie								Total	100.00	1
a chemical substance is absent from the list above, the	chemical substance is NOT a document, there is no credi	an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concern				0.57	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2
Iding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemie		astics. You can access the UL iQTM family of databases to	obtain a test	report at			Copper	7440-50-8	98	l
e protective "tubes" in which the specific product is sh	pped are made from polyvir	vyl chloride (PVC) plastic "Window envelopes" used to bol								1
rtain "reels" may be made from PVC plastic.			d the packing	slip on the o	uter box and		Palladium	7440-05-3	2	
rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informat eir original packing materials is true and correct to the b mpleteness and accuracy of data in this form because i ormation is often protected from disclosure as trade se	best of its knowledge and be t has been compiled based of crets and some information parts and the average weigh	substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers ai t of anticipated significant toxic metals components. Thes	corporated's s / Incorporated ded by raw m nd raw materi	emiconducto I cannot guara aterial supplie al suppliers. In	r devices in antee the ers. Supplier nformation is		Palladium	7440-05-3 Total	2	
rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informat ir original packing materials is true and correct to the t mpleteness and accuracy of data in this form because i ormation is often protected from disclosure as trade se ovided only as estimates of the average weight of these dopants, metals, and non-metal materials contained wi crochip Technology Incorporated does not provide any irranties provided by Microchip Technology Incorporate otations, sales order acknowledgement, and invoices.	est of its knowledge and be t has been compiled based of crets and some information parts and the average weigh thin silicon devices (silicon I warranty, express or implies ed and its subsidiaries are co	substances restricted by RoHS in Microchip Technology Im lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an t of anticipated significant toxic metals components. Thes C) in the finished parts. d, with respect to the information provided in this declarati- intained in Microchip's standard terms and conditions of s	corporated's s / Incorporated ded by raw m nd raw materi e estimates d on. The exclus ale. These are	semiconducto I cannot guara aterial suppli al suppliers. II o not include sive, limited p provided in N	r devices in antee the ars. Supplier nformation is trace levels roduct ficrochip's	3.58				1.25
tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informat er original packing materials is true and correct to the te mpleteness and accuracy of data in this form because i ormation is often protected from disclosure as trade se ovided only as estimates of the average weight of these dopants, metals, and non-metal materials contained wi crochip Technology Incorporated does not provide any rranties provided by Microchip Technology Incorporate totations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates o	best of its knowledge and be t has been compiled based of crets and some information parts and the average weigi thin silicon devices (silicon I warranty, express or implie ed and its subsidiaries are co r changes to Material Conter the users' reliance on the in	substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. Thes C) in the finished parts. d, with respect to the information provided in this declarati	corporated's s / Incorporated ded by raw m nd raw materi e estimates d on. The exclus ale. These are ect or indirect	semiconducto I cannot guara aterial supplied al suppliers. Il o not include sive, limited p provided in M consequenti	r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	3.58		Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	100.00 % of Total Weight 100.00	1.25
tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informat ir original packing materials is true and correct to the pleteness and accuracy of data in this form because i ormation is often protected from disclosure as trade se uded only as estimates of the average weight of these lopants, metals, and non-metal materials contained wi rochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorporate tations, sales order acknowledgement, and invoices. Tochip disclaims any duty to notify users of updates o erwise, suffered by users or third parties as a result of	best of its knowledge and be t has been compiled based of crets and some information parts and the average weigi thin silicon devices (silicon I warranty, express or implie ed and its subsidiaries are co r changes to Material Conter the users' reliance on the in	substances restricted by RoHS in Microchip Technology Im lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers an to f anticipated significant toxic metals components. Thes C) in the finished parts. d, with respect to the information provided in this declaration intained in Microchip's standard terms and conditions of so the collectare for the shall not be liable for any damages, diret	corporated's s / Incorporated ded by raw m nd raw materi e estimates d on. The exclus ale. These are ect or indirect	semiconducto I cannot guara aterial supplied al suppliers. Il o not include sive, limited p provided in M consequenti	r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	3.58	(mg) Total Tin	Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight	1.25

Semiconductor Devic	ce Type: PT 64 (Lead) TQ	FP 14x14x1mm (V3 / VH)		nation Base A pper Alloy (C			•	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Markir and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	289.33	(mg) Total	Mold Compound	% ot Total Weight	53.58
Silica, vitreous (or fused)	60676-86-0	Mold Compound	45.543	245,932	455,430		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.661	25.172	46,615		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.215	17.360	32,148		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.161	0.868	1,607		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	32.381	174.856	323,807			Total	100.00	
Tin	7440-31-5	Lead Frame	0.083	0.449	831	179.50	(mg) Total	Lead Frame	% of Total Weight	33.24
Silver	7440-22-4	Lead Frame	0.633	3.419	6,332		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.060	0.323	598		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.083	0.449	831		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	1.129	6.096	11,288		Zinc	7440-66-6	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.122	0.661	1,224		Chromium	7440-47-3	0.25	
EPOXY RESIN	Trade Secret	Die Attach	0.109	0.588	1,088			Total	100.00	1
Silicon	7440-21-3	Chip (Die)	10.540	56.916	105,400	7.34	(mg) Total	Die Attach	% of Total Weight	1.36
Gold	7440-57-5	Wire Bond	0.340	1.836	3,400		Silver (Ag)	7440-22-4	83	
Tin	7440-31-5 Platir	g on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.940	5.076	9,400		ANHYDRIDE	Trade Secret	9	
		TOTALS:	100.000	540.000	1,000,000		EPOXY RESIN	Trade Secret	8	
	0.5400 g T	otal Mass						Total	100.00	3
an an added the shares FU Disasthese has been sould	deale between all dealers are strated as	welles dealerstless, and far an elitical test data				56.92	Total (mg)	Chip (Die)	% of Total Weight	10.54
emical substance is absent from the list above, the	chemical substance is NOT an in	tentional ingredient in the semiconductor device and				50.52	Doped Silicon	7440-21-3 Total	100 100.00	10.54
emical substance is absent from the list above, the or orated's knowledge and belief as of the date of this s not below the threshold of regulatory concern for a ng compounds used by Microchip meet the UL94 V0	chemical substance is NOT an in document, there is no credible rr any regulatory scheme world-wid flammability standard for plastic	tentional ingredient in the semiconductor device and eason to believe that the unavoidable impurity concer e.	ntration of the	chemical subs		1.84	,	7440-21-3	100	0.34
pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the or porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi in "reels" may be made from PVC plastic.	chemical substance is NOT an in document, there is no credible r any regulatory scheme world-wid flammability standard for plastic cals/plastics/	tentional ingredient in the semiconductor device and aason to believe that the unavoidable impurity conce e. s. You can access the UL iQTM family of databases t	ntration of the o obtain a test	chemical subs	stance, if		Doped Silicon	7440-21-3 Total	100 100.00	
hemical substance is absent from the list above, the <i>d</i> porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 /ul.com/global/eng/pages/offerings/industries/chemic portective "tubes" in which the specific product is shi in "reels" may be made from PVC plastic. which pechnology Incorporated believes the informati original packing materials is true and correct to the b leteness and accuracy of data in this form because ii mation is often protected from disclosure as trade se ded only as estimates of the average weight of these pants, metals, and non-metal materials contained wit sochip Technology Incorporated does not provide any unities provided by Microchip Technology Incorporated	chemical substance is NOT an in document, there is no credible rr any regulatory scheme world-wid flammability standard for plastic cals/plastics/ ipped are made from polyvinyl cl ion in this form concerning subs sest of its knowledge and belief, i t has been compiled based on th crets and some information may parts and the average weight of thin silicon devices (silicon IC) in warranty, express or implied, wi	tentional ingredient in the semiconductor device and aason to believe that the unavoidable impurity concer- e. s. You can access the UL iQTM family of databases t nloride (PVC) plastic. "Window envelopes" used to he tances restricted by RoHS in Microchip Technology In as of the date listed in this form. Microchip Technolog e ranges provided in Material Safety Data Sheets pro- not have been provided by subcontract assemblers a anticipated significant toxic metals components. The the finished parts.	ntration of the o obtain a test old the packing ncorporated's : yy Incorporate vided by raw m and raw materi sse estimates d	chemical subs report at I slip on the ou semiconducto d cannot guara aterial supplie al suppliers. Ir o not include sive, limited pi	iter box and r devices in intee the ers. Supplier iformation is trace levels		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
hemical substance is absent from the list above, the d porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi	chemical substance is NOT an in document, there is no credible rr any regulatory scheme world-wid flammability standard for plastic cals/plastics/ ipped are made from polyvinyl cl ion in this form concerning subs sest of its knowledge and belief, i t has been compiled based on th crets and some information may parts and the average weight of thin silicon devices (silicon IC) in warranty, express or implied, wi ad and its subsidiaries are contai r changes to Material Content De the users' reliance on the inform	tentional ingredient in the semiconductor device and asson to believe that the unavoidable impurity concer- e. S. You can access the UL IQTM family of databases to horide (PVC) plastic. "Window envelopes" used to hor tances restricted by RoHS in Microchip Technology In as of the date listed in this form. Microchip Technology In tan of the date listed in this form. Microchip Technology In as of the date listed by RoHS in Microchip Technology In tan of the date listed in this form. Microchip Technology In the date listed in this form. Microchip Technology In the tan of the the information successful to the semblers is anticipated significant toxic metals components. The the finished parts. the respect to the information provided in this declarant ned in Microchip's standard terms and conditions of clarations and shall not be liable for any damages, di	ntration of the o obtain a test old the packing ncorporated's i y Incorporated vided by raw m and raw materi ese estimates d tion. The exclu sale. These are rect or indirect	chemical subs report at slip on the ou semiconducto d cannot guars aterial supplie al suppliers. Ir o not include sive, limited pi provided in N , consequentia	itance, if iter box and r devices in intee the irs. Supplier iformation is trace levels roduct licrochip's al or	1.84	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100 100.00 % of Total Weight 100 100.00	0.34

MICROCHIP Semiconductor Devic	e Type: 80 TQFP 12x12	x1mm (X2/XD)		nation Base / pper Alloy (C			Package Homog	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	292.63	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	248.733	678.300			60676-86-0	85.00	
Epoxy Resin	50575-86-0 Trade Secret	Mold Compound Mold Compound	6,943	248.733	678,300		Silica, vitreous (or fused) Epoxy Resin	50676-86-0 Trade Secret	85.00	
Phenolic Resin	Trade Secret	Mold Compound	4,788	17.558	47.880		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.878	2.394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	36.785	100.314		Carbon Black	Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.905	2,468	38.50	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7439-03-0	Lead Frame	0.200	0.733	2,400	30.30	Copper	7440-50-8	95.54	10.5
Zinc	7440-22-4	Lead Frame	0.200	0.048	2,000		Iron	7439-89-6	2.35	
Phosphorous	7440-06-0	Lead Frame	0.009	0.048	87		Silver	7439-89-6	2.35	
Silver	7440-22-4	Die Attach	0.555	2.035	5,550		Zinc	7440-22-4	0.13	
Epoxy resin	68475-94-5	Die Attach	0.555	0.633	1,725		Phosphorous	7440-66-6	0.08	
Copper(II) oxide	1317-38-0	Die Attach	0.023	0.083	225		Phospholous	7723-14-0 Total	0.08	
Silicon	7440-21-3	Chip (Die)	7.500	27.503	75.000	0.75				0.75
						2.75	(mg) Total	Die Attach	% of Total Weight	0.75
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.197	0.721	1,965		Silver	7440-22-4	74.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.004	0.013	35		Epoxy resin	68475-94-5	23.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.584	12,500		Copper(II) oxide	1317-38-0	3.00	
		TOTALS:	100.000	366.700	1,000,000			Total	100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	comply with EU Directive 20	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	ctive) and with	EU	27.50	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight 100	7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this	comply with EU Directive 20 d via internal design control: chemical substance is NOT a document, there is no credit	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, Je reason to believe that the unavoidable impurity concer	, to the best of	Microchip Te	chnology	27.50 0.73				0.2
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the o corporated's knowledge and belief as of the date of this y, is not below the threshold of regulatory concern for a biding compounds used by Microchip meet the UL94 V0	comply with EU Directive 20 d via internal design control: chemical substance is NOT a document, there is no credit iny regulatory scheme world flammability standard for pl	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, Je reason to believe that the unavoidable impurity concer	, to the best of ntration of the	Microchip Te chemical subs	chnology		Doped Silicon	7440-21-3 Total Wire Bond Copper palladium	100 100.00	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the e vcorporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi	comply with EU Directive 20 d via internal design control: chemical substance is NOT a document, there is no credit iny regulatory scheme world flammability standard for pl als/plastics/	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide.	, to the best of ntration of the o obtain a test	Microchip Tec chemical subs report at	chnology stance, if		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
lirective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) compliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the or corporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi ertain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informati neir original packing materials is true and correct to the b ompleteness and accuracy of data in this form because in formation is often protected from disclosure as trade se	comply with EU Directive 2/ , d via internal design control: shemical substance is NOT a document, there is no credit iny regulatory scheme world flammability standard for pl cals/plastics/ ipped are made from polyvin on in this form concerning s est of its knowledge and bel t has been compiled based o crets and some information parts and the average weigf	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ple reason to believe that the unavoidable impurity concer wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	to the best of ntration of the o obtain a test old the packing ncorporated's a y Incorporate vided by raw m and raw materi	Microchip Ter chemical subs report at slip on the or semiconducto d cannot guara aterial supplices. Il	chnology stance, if uter box and r devices in antee the ars. Supplier formation is		Opped Silicon (mg) Total Copper	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8	100 100.00 % of Total Weight 98	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the <i>c</i> corporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a olding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi artain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informati bompleteness and accuracy of data in this form because in formation is often protected from disclosure as trade se rovided only as estimates of the average weight of these i dopants, metals, and non-metal materials contained wit icrochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporated uotations, sales order acknowledgement, and invoices.	comply with EU Directive 2i d via internal design control: themical substance is NOT a document, there is no credit iny regulatory scheme world flammability standard for pl als/plastics/ ipped are made from polyvin on in this form concerning s set of its knowledge and bel t has been compiled based o crets and some information parts and the average weigh hin silicon devices (silicon II warranty, express or impliec d and its subsidiaries are co	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology In n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a tt of anticipated significant toxic metals components. The C) in the finished parts. I, with respect to the information provided in this declarati ntained in Microchip's standard terms and conditions of s	to the best of tration of the o obtain a test old the packing ncorporated's a y Incorporated vided by raw m and raw materi se estimates d ion. The exclus sale. These are	Microchip Tet chemical subs report at slip on the or semiconducto d cannot guara aterial suppliers. In o not include sive, limited p provided in M	chnology stance, if uter box and r devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's		Copper Palladium	7440-21-3 Total Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98 2	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifie a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this iy, is not below the threshold of regulatory concern for a olding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi ritain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informati eir original packing materials is true and correct to the b impleteness and accuracy of data in this form because i formation is often protected from disclosure as trade se ovided only as estimates of the average weight of these dopants, metals, and non-metal materials contained wit icrochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporated totations, sales order acknowledgement, and invoices.	comply with EU Directive 2i d via internal design control: themical substance is NOT a document, there is no credit iny regulatory scheme world flammability standard for pl als/plastics/ ipped are made from polyvin on in this form concerning s est of its knowledge and bel thas been compiled based o crets and some information parts and the average weigh hin silicon devices (silicon li warranty, express or implied d and its subsidiaries are co- changes to Material Conten the users' reliance on the inl	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ple reason to believe that the unavoidable impurity concer wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets prov at of anticipated significant toxic metals components. The C) in the finished parts.	, to the best of htration of the o obtain a test old the packing ncorporated's : ny Incorporated's y Incorporated's y Incorporated ided by raw m and raw materia se estimates d ion. The exclus sale. These are rect or indirect	Microchip Tec chemical sub- report at I slip on the or semiconducto I cannot guara aterial supplier al supplieral o not include sive, limited p provided in N , consequenti	chnology stance, if uter box and or devices in antee the ars. Supplier nformation is trace levels roduct hicrochip's al or	0.73	Copper Palladium	7440-21-3 Total Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 98 2 100.00	0.2

AICROCHIP Semiconductor Devi	ce Type: PF 80 (Lead	1 TOFP 14x14mm (X3/XE)		nation Base / opper Alloy (C				geneous Materials: g. pc boards, display:	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Total	1	1					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	306.01	(mg) Total	Mold Compound	% ot Total Weight	57.52
Silica, vitreous (or fused)	60676-86-0	Mold Compound	48,892	260,105	488.920		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.004	26.623	50.042		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.451	18.360	34,512		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.173	0.918	1,726		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	31.426	167.187	314.261			Total	100.00	1
Tin	7440-31-5	Lead Frame	0.081	0.429	807	171.62	(mg) Total	Lead Frame	% of Total Weight	32.26
Silver	7440-22-4	Lead Frame	0.615	3.269	6,146		Copper	7440-50-8	97.42	02120
Zinc	7440-66-6	Lead Frame	0.058	0.309	581		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.081	0.429	807		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.830	4,416	8.300		Zinc	7440-66-6	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.090	0.479	900		Chromium	7440-47-3	0.25	
EPOXY RESIN	Trade Secret	Die Attach	0.080	0.426	800			Total	100.00	1
Silicon	7440-21-3	Chip (Die)	7.650	40.698	76,500	5.32	(mg) Total	Die Attach	% of Total Weight	1
Gold	7440-57-5	Wire Bond	0.370	1.968	3,700	5.52	Silver (Ag)	7440-22-4	83	· · · ·
Tin	7440-37-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.200	6.384	12,000		ANHYDRIDE	Trade Secret	9	
1111	7440-31-5	Plating on external leads (pins) - Matternin/ annealed at 150°C for 1 hour TOTALS:	100.000	532.000	1,000,000		EPOXY RESIN	Trade Secret	9	
		g Total Mass	100.000	332.000	1,000,000		EPOAT RESIN	Total	100.00	
pliance with the above EU Directives has been verified	ed via internal design contro		S Recast Direc			40.70	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	7.65
pliance with the above EU Directives has been verifi hemical substance is absent from the list above, the porated's knowledge and belief as of the date of thi is not below the threshold of regulatory concern for ing compounds used by Microchip meet the UL94 Vi	ed via internal design contro chemical substance is NOT s document, there is no cred any regulatory scheme worl D flammability standard for p	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concert	, to the best of ntration of the	Microchip Te	chnology	40.70		,		0.37
pliance with the above EU Directives has been verifi hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ling compounds used by Microchip meet the UL94 VI //ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is sl	, ed via internal design contro chemical substance is NOT document, there is no cred any regulatory scheme worl D flammability standard for p icals/plastics/	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide.	, to the best of htration of the o obtain a test	Microchip Te chemical sub report at	chnology stance, if		Doped Silicon	7440-21-3 Total	100 100.00	
rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ling compounds used by Microchip meet the UL94 V/ //ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is sl ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informa original packing materials is true and correct to the pleteness and accuracy of data in this form because mation is often protected from disclosure as trade si	ed via internal design contro chemical substance is NOT a document, there is no cred any regulatory scheme worl D flammability standard for p icals/plastics/ nipped are made from polyvi tion in this form concerning best of its knowledge and b it has been compiled based ecrets and some informatio	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. alastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro i may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The	, to the best of htration of the o obtain a test old the packing hcorporated's : ny Incorporate vided by raw m and raw materi	Microchip Te chemical sub: report at g slip on the o semiconducto d cannot guar naterial suppli	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is		Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verifi- themical substance is absent from the list above, the prorated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ling compounds used by Microchip meet the UL94 Vi //ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is sl ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informa original packing materials is true and correct to the pleteness and accuracy of data in this form because mation is often protected from disclosure as trade sp ided only as estimates of the average weight of thes- opants, metals, and non-metal materials contained w ochip Technology Incorporated does not provide any	ed via internal design contro chemical substance is NOT is document, there is no cred any regulatory scheme worl 0 flammability standard for p icals/plastics/ nipped are made from polyvi tion in this form concerning best of its knowledge and b it has been compiled based ecrets and some informatio e parts and the average weig tithin silicon devices (silicon y warranty, express or implied	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. alastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro i may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The	to the best of htration of the o obtain a test old the packing ty incorporated's : yy incorporate vided by raw m and raw materi se estimates d	Microchip Te chemical sub: report at g slip on the o semiconducto d cannot guar naterial suppli ial suppliers. I do not include usive, limited p	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verifi- themical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ting compounds used by Microchip meet the UL94 Vi //ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is sl ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informa original packing materials is true and correct to the pleteness and accuracy of data in this form because pants, metals, and non-metal materials contained w ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporat ations, sales order acknowledgement, and invoices.	ed via internal design contro chemical substance is NOT a document, there is no cred any regulatory scheme worl D flammability standard for p icals/plastics/ nipped are made from polyvi tion in this form concerning best of its knowledge and b it has been compiled based acrets and some information e parts and the average weig ithin silicon devices (silicon y warranty, express or implife ed and its subsidiaries are c or changes to Material Conte t the users' reliance on the in	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity concer d-wide. alastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology Ir elief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov a may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The IC) in the finished parts.	to the best of htration of the o obtain a test old the packing ncorporated's - yy Incorporated yided by raw m and raw materi use estimates o ion. The exclu sale. These are rect or indirect	Microchip Te chemical sub: report at g slip on the o semiconducto d cannot guar naterial suppliers. I do not include sive, limited p s provided in N	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct ficrochip's al or	1.97	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100 100.00 % of Total Weight 100 100.00	0.37

AICROCHIP Semiconductor Devi	ice Type: 100 TQFP 12x	12x1mm (V7)		nation Base / pper Alloy (C			Package Homo	geneous Materials		JEDEC 97 Product Markir and/or Pkg. Labeling e3
		"Contained In"	% Total			312.02	(mg) Total	Mold Compound	% ot Total Weight	t 79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	512.02	(ilig) Total	Mola Compound	% or rotal weight	1 19.0
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	265.215	678,300		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	6.943	27.146	69,426		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.788	18.721	47,880		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.936	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.000	39.101	100,003			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.267	1.043	2,667	41.06	(mg) Total	Lead Frame	% of Total Weight	t 10.5
Silver	7440-22-4	Lead Frame	0.175	0.685	1,752		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.185	473		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.011	0.041	105		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.555	2.170	5,550		Silicon	7440-21-3	0.45	1
Epoxy resin	68475-94-5	Die Attach	0.173	0.674	1,725		Magnesium	7439-95-4	0.10	1
Copper(II) oxide	1317-38-0	Die Attach	0.023	0.088	225			Total	100.00	ĩ
Silicon	7440-21-3	Chip (Die)	7.500	29.325	75,000	2.93	(mg) Total	Die Attach	% of Total Weight	0.75
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.197	0.768	1.965		Silver	7440-22-4	74.00	1
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.004	0.014	35		Epoxy resin	68475-94-5	23.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.888	12,500		Copper(II) oxide	1317-38-0	3.00	
		TOTALS:	100.000	391.000	1.000.000		Coppor(ii) Childo	Total	100.00	u
	0 2010	g Total Mass		0011000	1,000,000	29.33	Total (mg)	Chip (Die)	% of Total Weight	
		g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro				29.33	Total (Ing)	Chip (Die)		1.5
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive							Doped Silicon	7440-21-3	100 100.00	
pliance with the above EU Directives has been verified	ed via internal design control	s, supplier declarations, and /or analytical test data.						Total		
								Total	100.00	
porated's knowledge and belief as of the date of this	s document, there is no credil	In intentional ingredient in the semiconductor device an ole reason to believe that the unavoidable impurity conc -wide.				0.78	(mg) Total	Wire Bond Copper palladium coated (CuPd)	% of Total Weight	
rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ling compounds used by Microchip meet the UL94 V0	s document, there is no credil any regulatory scheme world 0 flammability standard for pl	ble reason to believe that the unavoidable impurity conc	entration of th	e chemical su		0.78	(mg) Total Copper	Wire Bond Copper palladium		
rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ting compounds used by Microchip meet the UL94 V(//ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh	s document, there is no credil any regulatory scheme world 0 flammability standard for pl icals/plastics/	ble reason to belleve that the unavoidable impurity conc -wide.	entration of th	e chemical su st report at	bstance, if	0.78		Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 98 2	a 0.2
rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 Vd //ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informat leir original packing materials is true and correct to th pleteness and accuracy of data in this form because lier information is often protected from disclosure a	s document, there is no credil any regulatory scheme world 0 flammability standard for pl icals/plastics/ hipped are made from polyvir tion in this form concerning s he best of its knowledge and l it has been compiled based of us trade secrets and some info	ble reason to believe that the unavoidable impurity conc wide. astics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchip Techn on the ranges provided in Material Safety Data Sheets pr ormation may not have been provided by subcontract as average weight of anticipated significant toxic metals c	entration of th s to obtain a test hold the packin locorporated's loology Incorpor ovided by raw ssemblers and	e chemical su st report at ng slip on the s semiconduc rated cannot g material supp raw material s	bstance, if outer box tor devices guarantee the liers. suppliers.		Copper	Wire Bond Copper palladium coated (CuPd) 7440-50-8	% of Total Weight	a 0.2
rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 VU //ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the informat eir original packing materials is true and correct to th pleteness and accuracy of data in this form because pler information is often protected from disclosure a rmation is provided only as estimates of the average ude trace levels of dopants, metals, and non-metal ma- rochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorpora- tations, sales order acknowledgement, and invoices.	s document, there is no credit any regulatory scheme world 0 flammability standard for pl icals/plastics/ hipped are made from polyvir tion in this form concerning s he best of its knowledge and i thas been compiled based or is trade secrets and some infr weight of these parts and the aterials contained within silic y warranty, express or implier ted and its subsidiaries are co	ble reason to believe that the unavoidable impurity conc wide. astics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchip Technology pelief, as of the date listed in this form. Microchip Technology printion may not have been provided by subcontract as average weight of anticipated significant toxic metals of on devices (silicon IC) in the finished parts. I, with respect to the information provided in this declar intained in Microchip's standard terms and conditions of	entration of th s to obtain a ter hold the packin Incorporated's iology Incorpor ovided by raw semblers and components. Ti ation. The excl f sale. These a	e chemical su st report at ng slip on the s semiconduc rated cannot g material supp material supp material supp sese estimate usive, limited re provided in	bstance, if outer box tor devices juarantee the liers. s uppliers. s do not product Microchip's		Copper Palladium	Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	% of Total Weight 98 2	
rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ling compounds used by Microchip meet the UL94 VI //ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh certain "reels" may be made from PVC plastic. cochip Technology Incorporated believes the informat eir original packing materials is true and correct to th pleteness and accuracy of data in this form because plier information is often protected from disclosure a mation is provided only as estimates of the average ide trace levels of dopants, metals, and non-metal ma bochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices. cochip dicalaims any duty to notify users of updates of	s document, there is no credil any regulatory scheme world 0 flammability standard for pl icals/plastics/ hipped are made from polyvir tion in this form concerning s he best of its knowledge and l it has been compiled based c is trade secrets and some infi- weight of these parts and the aterials contained within silic y warranty, express or implied ted and its subsidiaries are co- pr changes to Material Conter f the users' reliance on the ini	ble reason to believe that the unavoidable impurity conc wide. astics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchip Technology of the date listed in Material Safety Data Sheets pro- promation may not have been provided by subcontract as average weight of anticipated significant toxic metals c on devices (silicon IC) in the finished parts.	entration of th is to obtain a test hold the packin Incorporated's iology Incorpor ovided by raw ssemblers and ioomponents. TI ation. The excl f sale. These a direct or indire	e chemical su st report at ng slip on the s semiconduc rated cannot g material supp raw material s ense estimate usive, limited re provided in ct, consequen	bstance, if outer box tor devices guarantee the liers. suppliers. s do not product Microchip's utial or		Copper Palladium	Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight 98 2 100.00	. 0.2
porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ing compounds used by Microchip meet the UL94 VI //ul.com/global/eng/pages/offerings/industries/chemi porotective "tubes" in which the specific product is sh erertain "reels" may be made from PVC plastic. bochip Technology Incorporated believes the informati er original packing materials is true and correct to th bleteness and accuracy of data in this form because lier information is often protected from disclosure a mation is provided only as estimates of the average de trace levels of dopants, metals, and non-metal ma- pochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorpora- tations, sales order acknowledgement, and involces. Sochip disclaims any duty to notify users of updates of wise, suffered by users or third parties as a result of	s document, there is no credil any regulatory scheme world 0 flammability standard for pl icals/plastics/ hipped are made from polyvir tion in this form concerning s he best of its knowledge and l it has been compiled based c is trade secrets and some infi- weight of these parts and the aterials contained within silic y warranty, express or implied ted and its subsidiaries are co- pr changes to Material Conter f the users' reliance on the ini	ble reason to believe that the unavoidable impurity conc wide. astics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchip Technology predief, as of the date listed in this form. Microchip Technology predief, as of the date listed in Material Safety Data Sheets pr ormation may not have been provided by subcontract as average weight of anticipated significant toxic metals c on devices (silicon IC) in the finished parts. I, with respect to the information provided in this declar ntained in Microchip's standard terms and conditions o t Declarations and shall not be liable for any damages,	entration of th is to obtain a test hold the packin Incorporated's iology Incorpor ovided by raw ssemblers and ioomponents. TI ation. The excl f sale. These a direct or indire	e chemical su st report at ng slip on the s semiconduc rated cannot g material supp raw material s ense estimate usive, limited re provided in ct, consequen	bstance, if outer box tor devices guarantee the liers. suppliers. s do not product Microchip's utial or		Copper Palladium (mg) Total	Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	% of Total Weight 98 2 100.00 % of Total Weight	a 0.2

Basic Substance CAS Number Sub-Component W Silica, vitreous (or fused) 60676-86-0 Mold Compound 5 Epoxy Resin Trade Secret Mold Compound 5 Phenolic Resin Trade Secret Mold Compound 6 Carbon Black 1333-86-4 Mold Compound 6 Copper 7440-50-8 Lead Frame 2 Tin 7440-31-5 Lead Frame 0 Silver 7440-66-6 Lead Frame 0 Zinc 7440-66-6 Lead Frame 0 Silver 7440-62-4 Lead Frame 0 Chromium 7440-62-6 Lead Frame 0 Silver (Ag) 7440-22-4 Lead Frame 0 Silver (Ag) 7440-22-4 Die Attach 0 Silver (Ag) 7440-22-4 Die Attach 0 EPOXY RESIN Trade Secret Die Attach 0 EPOXY RESIN Trade Secret Die Attach 0 Silicon 7440-21-3 <td< th=""><th>the best of I tion of the c</th><th>Microchip Tec</th><th>-</th><th>339.65 133.44 2.88 13.47</th><th>(mg) Total Silica, vitreous (or fused) Epoxy Resin Carbon Black (mg) Total Copper Tin Silver Zinc Chromium (mg) Total Silver (Aq) ANHYDRIDE EPOXY RESIN Total (mg) Doped Silicon</th><th>Mold Compound 60676-86-0 Trade Secret 1333-86-4 Total Lead Frame 7440-50-8 7440-50-8 7440-66-6 7440-47-3 Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Total Chip (Die) 7440-21-3</th><th>% of Total Weight 85.00 8.70 6.00 0.30 100.00 % of Total Weight 97.42 0.25 1.91 0.18 0.25 100.00 % of Total Weight 8 9 8 100.00 % of Total Weight 100</th><th>e3 68.34 26.85 0.58 2.71</th></td<>	the best of I tion of the c	Microchip Tec	-	339.65 133.44 2.88 13.47	(mg) Total Silica, vitreous (or fused) Epoxy Resin Carbon Black (mg) Total Copper Tin Silver Zinc Chromium (mg) Total Silver (Aq) ANHYDRIDE EPOXY RESIN Total (mg) Doped Silicon	Mold Compound 60676-86-0 Trade Secret 1333-86-4 Total Lead Frame 7440-50-8 7440-50-8 7440-66-6 7440-47-3 Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Total Chip (Die) 7440-21-3	% of Total Weight 85.00 8.70 6.00 0.30 100.00 % of Total Weight 97.42 0.25 1.91 0.18 0.25 100.00 % of Total Weight 8 9 8 100.00 % of Total Weight 100	e3 68.34 26.85 0.58 2.71	
Silica, vitreous (or fused) 60676-86-0 Mold Compound 5 Epoxy Resin Trade Secret Mold Compound 4 Carbon Black 1333-86-4 Mold Compound 4 Carbon Black 1333-86-4 Mold Compound 4 Carbon Black 1333-86-4 Mold Compound 6 Copper 7440-50-8 Lead Frame 2 Tin 7440-66-6 Lead Frame 0 Chromium 7440-47-3 Lead Frame 0 Chromium 7440-47-3 Lead Frame 0 Silver (Ag) 7440-47-3 Lead Frame 0 Silver (Ag) 7440-47-3 Lead Frame 0 Chromium 7440-47-3 Lead Frame 0 Silver (Ag) 7440-47-3 Lead Frame 0 Silver (Ag) Trade Secret Die Attach 0 Silicon 7440-51-3 Chip (Die) 1 Gold 7440-51-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C tor 1 hour 1 <t< th=""><th>58.089 5.946 4.100 0.205 26.156 0.067 0.511 0.048 0.067 0.481 0.046 2.710 0.046 2.710 0.0420 1.100 100.000 the best of f tion of the c</th><th>288.702 29.550 20.379 1.019 129.995 0.334 2.542 0.240 0.334 2.393 0.259 0.231 13.469 2.087 5.467 497.000 ive) and with</th><th>580,890 59,456 41,004 2,050 261,559 671 5,115 483 671 4,814 522 464 27,100 4,200 11,000 1,000,000</th><th>2.88</th><th>Epoxy Resin Phenolic Resin Carbon Black (mg) Total Copper Tin Silver Zinc Chromium (mg) Total Silver (Aq) ANHYDRIDE EPOXY RESIN Total (mg)</th><th>Trade Secret Trade Secret 1333-86-4 Total 2000 7440-50-8 7440-50-8 7440-51-5 7440-66-6 7440-66-6 7440-22-4 Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Chip (Die) 7440-21-3</th><th>8.70 6.00 0.30 % of Total Weight 97.42 0.25 1.91 0.18 0.25 100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100</th><th>0.58</th></t<>	58.089 5.946 4.100 0.205 26.156 0.067 0.511 0.048 0.067 0.481 0.046 2.710 0.046 2.710 0.0420 1.100 100.000 the best of f tion of the c	288.702 29.550 20.379 1.019 129.995 0.334 2.542 0.240 0.334 2.393 0.259 0.231 13.469 2.087 5.467 497.000 ive) and with	580,890 59,456 41,004 2,050 261,559 671 5,115 483 671 4,814 522 464 27,100 4,200 11,000 1,000,000	2.88	Epoxy Resin Phenolic Resin Carbon Black (mg) Total Copper Tin Silver Zinc Chromium (mg) Total Silver (Aq) ANHYDRIDE EPOXY RESIN Total (mg)	Trade Secret Trade Secret 1333-86-4 Total 2000 7440-50-8 7440-50-8 7440-51-5 7440-66-6 7440-66-6 7440-22-4 Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Chip (Die) 7440-21-3	8.70 6.00 0.30 % of Total Weight 97.42 0.25 1.91 0.18 0.25 100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100	0.58	
Epoxy Resin Trade Secret Mold Compound 4 Phenolic Resin Trade Secret Mold Compound 4 Carbon Black 133-86-4 Mold Compound 4 Carbon Black 133-86-4 Mold Compound 4 Corpoer 7440-50-8 Lead Frame 2 Tin 7440-21-5 Lead Frame 6 Silver 7440-22-4 Lead Frame 6 Zinc 7440-22-4 Die Attach 6 Silver (Ag) 7440-22-4 Die Attach 6 Chromium 7440-21-3 Die Attach 6 Silver (Ag) 7440-21-3 Ohie Attach 6 EPOXY RESIN Trade Secret Die Attach 6 Silicon 7440-21-3 Wire Bond 7 Tin 7440-21-5 Wire Bond 7 Carbo Silicon 7440-21-5 Wire Bond 7 Tin 7440-21-5 Wire Bond 7 Carbo Silicon 7440-21-5 Uire Silicon 7	5.946 4.100 0.205 26.156 0.067 0.511 0.048 0.067 0.481 0.052 0.048 0.048 0.048 0.048 0.048 0.046 2.710 0.420 1.100 100.000 the best of I tion of the c	29.550 20.379 1.019 129.995 0.334 2.542 0.240 0.334 2.393 0.259 0.231 13.469 2.087 5.467 497.000 ive) and with	59,456 41,004 2,050 261,559 671 5,115 483 671 4,814 522 464 27,100 4,200 11,000 1,000,000	2.88	Epoxy Resin Phenolic Resin Carbon Black (mg) Total Copper Tin Silver Zinc Chromium (mg) Total Silver (Aq) ANHYDRIDE EPOXY RESIN Total (mg)	Trade Secret Trade Secret 1333-86-4 Total 2000 7440-50-8 7440-50-8 7440-51-5 7440-66-6 7440-66-6 7440-22-4 Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Chip (Die) 7440-21-3	8.70 6.00 0.30 % of Total Weight 97.42 0.25 1.91 0.18 0.25 100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100	0.58	
Phenolic Resin Trade Secret Mold Compound 4 Carbon Black 1333-86-4 Mold Compound 0 Copper 7440-50-8 Lead Frame 2 Tin 7440-50-8 Lead Frame 2 Silver 7440-66-6 Lead Frame 0 Zinc 7440-66-6 Lead Frame 0 Chronium 7440-22-4 Lead Frame 0 Chronium 7440-23-3 Lead Frame 0 Chronium 7440-22-4 Die Attach 0 Silver (Ag) 7440-22-4 Die Attach 0 ANHYDRIDE Trade Secret Die Attach 0 Gold 7440-21-3 Chip (Die) 2 Gold 7440-21-3 Chip (Die) 2 Gold 7440-21-3 Wire Bond 0 Tin 7440-21-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 1 0.4970 g Total Mass ToTALS: 1 0 seoudutto device and its homogenous materials comply with E	4.100 0.205 26.156 0.067 0.511 0.048 0.067 0.481 0.052 0.046 2.710 0.420 1.100 100.000 the best of I tion of the c	20.379 1.019 129.995 0.334 2.542 0.240 0.334 2.393 0.259 0.231 13.469 2.087 5.467 497.000 ive) and with	41,004 2,050 261,559 671 5,115 483 671 4,814 522 464 27,100 4,200 11,000 1,000,000	2.88	Phenolic Resin Carbon Black (mg) Total Copper Tin Silver Zinc Chromium (mg) Total Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	Trade Secret 1333-86-4 Total Lead Frame 7440-50-8 7440-50-8 7440-22-4 7440-22-4 Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Chip (Die) 7440-21-3	6.00 0.30 100.00 % of Total Weight 97.42 0.25 1.91 0.18 0.25 100.00 % of Total Weight 8 8 100.00 % of Total Weight 100.00	0.58	
Copper 7440-50-8 Lead Frame 2 Tin 7440-31-5 Lead Frame 0 Silver 7440-22-4 Lead Frame 0 Zinc 7440-66-6 Lead Frame 0 Chromium 7440-47-3 Lead Frame 0 Silver (Ag) 7440-22-4 Die Attach 0 ANHYDRIDE Trade Secret Die Attach 0 ANHYDRIDE Trade Secret Die Attach 0 Silicon 7440-27-3 Chip (Die) 2 Gold 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS: Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS: uniccan substance is above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. winical substance is absent from the list above, the chemical substance is NOT a	26.156 0.067 0.511 0.048 0.067 0.481 0.052 0.046 2.710 0.420 1.100 100.000 the best of I tion of the c	129.995 0.334 2.542 0.240 0.334 2.393 0.259 0.231 13.469 2.087 5.467 497.000 ive) and with	261,559 671 5,115 483 671 4,814 522 464 27,100 4,200 11,000 1,000,000	2.88	(mg) Total Copper Tin Silver Chromium (mg) Total Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	Total Lead Frame 7440-50-8 7440-31-5 7440-22-4 7440-66-6 7440-47-3 Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Chip (Die) 7440-21-3	100.00 % of Total Weight 97.42 0.25 1.91 0.18 0.25 100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100	0.58	
Tin 7440-31-5 Lead Frame () Silver 7440-66-6 Lead Frame () Zinc 7440-66-6 Lead Frame () Chromium 7440-7-3 Lead Frame () Silver (Ag) 7440-7-3 Lead Frame () ANHYDRIDE Trade Secret Die Attach () EPOXY RESIN Trade Secret Die Attach () Silicon 7440-57-5 Wire Bond () Gold 7440-57-5 Wire Bond () Tin 7440-57-5 Wire Bond () Weizond () () () () Silicon 7440-57-5 Wire Bond () () Tin 7440-57-5 Wire Bond () () Silicon 0.4970 g Total Mass () ()	0.067 0.511 0.048 0.067 0.481 0.052 0.046 2.710 0.420 1.100 100.000 lecast Direct the best of I tion of the c	0.334 2.542 0.240 0.334 2.393 0.259 0.231 13.469 2.087 5.467 497.000 ive) and with	671 5,115 483 671 4,814 522 464 27,100 4,200 11,000 1,000,000 EU	2.88	Copper Tin Silver Zinc Chromium (mg) Total Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	Lead Frame 7440-50-8 7440-31-5 7440-22-4 7440-22-4 7440-66-6 7440-22-4 Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Chip (Die) 7440-21-3	% of Total Weight 97.42 0.25 1.91 0.18 0.25 100.00 % of Total Weight 8 9 8 100.00 % of Total Weight 100	0.58	
Silver 7440-22-4 Lead Frame () Zinc 7440-66-6 Lead Frame () Chromium 7440-47-3 Lead Frame () Silver (Ag) 7440-22-4 Die Attach () ANHYDRIDE Trade Secret Die Attach () EPOXY RESIN Trade Secret Die Attach () Silicon 7440-21-3 Chip (Die) 2 Gold 7440-57-5 Wire Bond () Gold 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour () Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour () writeconductor device and its homogenous materials comply with EU Directive 2002/55/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec 0 e 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. emical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to thoret delow the threshold of regulatory concern for any regulato	0.511 0.048 0.067 0.481 0.052 0.046 2.710 0.420 1.100 100.000 the best of I tion of the c	2.542 0.240 0.334 2.393 0.259 0.231 13.469 2.087 5.467 497.000 vive) and with	5,115 483 671 4,814 522 464 27,100 4,200 11,000 1,000,000	2.88	Copper Tin Silver Zinc Chromium (mg) Total Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	7440-50-8 7440-31-5 7440-22-4 7440-68-6 7440-47-3 Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Trade Diep Chip (Die)	97.42 0.25 1.91 0.18 0.25 100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100	0.58	
Zinc 7440-66-6 Lead Frame C Chromium 7440-47-3 Lead Frame C Silver (Ag) 7440-27-3 Lead Frame C ANHYDRIDE Trade Secret Die Attach C EPOXY RESIN Trade Secret Die Attach C Silicon 7440-21-3 Chip (Die) 2 Gold 7440-21-3 Chip (Die) 2 Gold 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7 Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7 Wire Conductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recteve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). TOTALS: iance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Emical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to th orated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentratic not below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds	0.048 0.067 0.481 0.052 0.046 2.710 0.420 1.100 100.000 tecast Direct	0.240 0.334 2.393 0.259 0.231 13.469 2.087 5.467 497.000 vive) and with	483 671 4,814 522 464 27,100 4,200 11,000 1,000,000 EU		Tin Silver Zinc Chromium (mg) Total Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	7440-31-5 7440-22-4 7440-66-6 7440-47-3 Total Die Attach 7440-22-4 Trade Secret Trade Secret Total Chip (Die) 7440-21-3	0.25 1.91 0.18 0.25 100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100		
Zinc 7440-66-6 Lead Frame C Chromium 7440-47-3 Lead Frame C Silver (Ag) 7440-27-3 Lead Frame C ANHYDRIDE Trade Secret Die Attach C EPOXY RESIN Trade Secret Die Attach C Silicon 7440-21-3 Chip (Die) 2 Gold 7440-21-3 Chip (Die) 2 Gold 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7 Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7 Wire Conductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recteve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). TOTALS: iance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Emical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to th orated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentratic not below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds	0.048 0.067 0.481 0.052 0.046 2.710 0.420 1.100 100.000 tecast Direct	0.240 0.334 2.393 0.259 0.231 13.469 2.087 5.467 497.000 vive) and with	483 671 4,814 522 464 27,100 4,200 11,000 1,000,000 EU		Tin Silver Zinc Chromium (mg) Total Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	7440-31-5 7440-22-4 7440-66-6 7440-47-3 Total Die Attach 7440-22-4 Trade Secret Trade Secret Total Chip (Die) 7440-21-3	0.25 1.91 0.18 0.25 100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100		
Chromium 7440-47-3 Lead Frame (Silver (Ag) 7440-22-4 Die Attach (ANHYDRIDE Trade Secret Die Attach (EPOXY RESIN Trade Secret Die Attach (Silicon 7440-21-3 Chip (Die) (Gold 7440-21-3 Chip (Die) (Gold 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour (TOTALS: 10 0.4970 g Total Mass (amiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Reve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). (ance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. (wrical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to th orated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentratic not below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtai l.com/global/eng/pag	0.067 0.481 0.052 0.046 2.710 0.420 1.100 100.000 tecast Direct	0.334 2.393 0.259 0.231 13.469 2.087 5.467 497.000 vive) and with	671 4,814 522 464 27,100 4,200 11,000 11,000		Silver Zinc Chromium (mg) Total Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	7440-22-4 7440-66-6 7440-47-3 Total Die Attach 7440-22-4 Trade Secret Trade Secret Chip (Die) 7440-21-3	1.91 0.18 0.25 00.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100		
Silver (Ag) 7440-22-4 Die Attach (C) ANHYDRIDE Trade Secret Die Attach (C) EPOXY RESIN Trade Secret Die Attach (C) Silicon 7440-21-3 Chip (Die) (2) Gold 7440-27-3 Chip (Die) (2) Gold 7440-27-3 Wire Bond (C) Tin 7440-57-5 Wire Bond (2) Gold 7440-57-5 Wire Bond (2) Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour (2) Trade Secret Die Attach (2) (2) (2) Bitog on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour (2) (2) (2) Tin 7440-57-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour (2) Bitog on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour (2) (2) Bitog on external leads (pins) - Matter Tin / annealed at 150°C for 1 hour (2) (2) Bitog on external leads (pins) (2) (2)	0.481 0.052 0.046 2.710 0.420 1.100 100.000 Recast Direct the best of I	2.393 0.259 0.231 13.469 2.087 5.467 497.000 vive) and with	4,814 522 464 27,100 4,200 11,000 1,000,000		Zinc Chromium (mg) Total Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	7440-68-6 7440-47-3 Total Die Attach 7440-22-4 Trade Secret Trade Secret Total Chip (Die) 7440-21-3	0.18 0.25 100.00 % of Total Weight 8 9 100.00 % of Total Weight 100		
ANHYDRIDE Trade Secret Die Attach (EPOXY RESIN Trade Secret Die Attach (Silicon 7440-21-3 Chip (Die) 2 Gold 7440-21-3 Chip (Die) 2 Gold 7440-31-5 Wire Bond (Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour (0.4970 g Total Mass TOTALS: 10 miconductor device and its homogenous materials comply with EU Directive 2002/55/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec 202/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. . wrical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to th orated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentratic not below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obt: 0. u.com/global/eng/pages/offerings/industries/chemicals/plastics/ . <	0.052 0.046 2.710 0.420 1.100 100.000 tecast Direct	0.259 0.231 13.469 2.087 5.467 497.000 ive) and with	522 464 27,100 4,200 11,000 1,000,000		Chromium (mg) Total Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	7440-47-3 Total Die Attach 7440-22-4 Trade Secret Trade Secret Total Chip (Die) 7440-21-3	0.25 100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100		
EPOXY RESIN Trade Secret Die Attach O Silicon 7440-21-3 Chip (Die) 2 Gold 7440-27-5 Wire Bond 0 Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7 Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7 TOTALS: 10 0.4970 g Total Mass amiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). aiance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. attention of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration on the blew the threshold of regulatory concern for any regulatory scheme world-wide. g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obt: II.com/global/eng/pages/offerings/industries/chemicals/plastics/ other the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the "reels" may be made from PVC plastic. <td colsp<="" td=""><td>0.046 2.710 0.420 1.100 100.000 Recast Direct the best of I tion of the c</td><td>0.231 13.469 2.087 5.467 497.000 ive) and with</td><td>464 27,100 4,200 11,000 1,000,000 EU</td><td></td><td>(mg) Totai Silver (Ag) ANHYDRIDE EPOXY RESIN Totai (mg)</td><td>Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Chip (Die) 7440-21-3</td><td>100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100</td><td></td></td>	<td>0.046 2.710 0.420 1.100 100.000 Recast Direct the best of I tion of the c</td> <td>0.231 13.469 2.087 5.467 497.000 ive) and with</td> <td>464 27,100 4,200 11,000 1,000,000 EU</td> <td></td> <td>(mg) Totai Silver (Ag) ANHYDRIDE EPOXY RESIN Totai (mg)</td> <td>Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Chip (Die) 7440-21-3</td> <td>100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100</td> <td></td>	0.046 2.710 0.420 1.100 100.000 Recast Direct the best of I tion of the c	0.231 13.469 2.087 5.467 497.000 ive) and with	464 27,100 4,200 11,000 1,000,000 EU		(mg) Totai Silver (Ag) ANHYDRIDE EPOXY RESIN Totai (mg)	Total Die Attach 7440-22-4 Trade Secret Trade Secret Trade Secret Chip (Die) 7440-21-3	100.00 % of Total Weight 83 9 8 100.00 % of Total Weight 100	
Silicon 7440-21-3 Chip (Die) 2 Gold 7440-57-5 Wire Bond 0 Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 0 0.4970 g Total Mass TOTALS: 10 miconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recever 2002/95/EC (End-of-Life Vehicles (ELV) Directive). 10 iance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 10 emical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to th orated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration on the blow the threshold of regulatory concern for any regulatory scheme world-wide. 10 g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtail.com/global/eng/pages/offerings/industries/chemicals/plastics/ 10 otective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the "reels" may be made from PVC plastic. 10 hip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorp 'iginal p	2.710 0.420 1.100 100.000 ecast Direct the best of I tion of the c	13.469 2.087 5.467 497.000 ive) and with Microchip Tec	27,100 4,200 11,000 1,000,000 EU		Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	Die Attach 7440-22-4 Trade Secret Trade Secret Total Chip (Die) 7440-21-3	% of Total Weight 83 9 9 100.00 % of Total Weight 100		
Gold 7440-57-5 Wire Bond (c) Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS: 10 OL4970 g Total Mass TOTALS: 10 amiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec amiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec amiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec amiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec amiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec amiconductor device and to be envice (EU V) Directive, be chemical substance is NOT an intentional ingredient in the semiconductor device and, to the oraced's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration to below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtai l.com/global/eng/pages/offerings/industries/chemicals/plastics/ <	0.420 1.100 100.000 Recast Direct the best of I tion of the c	2.087 5.467 497.000 iive) and with Microchip Tec	4,200 11,000 1,000,000 EU		Silver (Ag) ANHYDRIDE EPOXY RESIN Total (mg)	7440-22-4 Trade Secret Trade Secret Total Chip (Die) 7440-21-3	83 9 8 100.00 % of Total Weight 100		
Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS: 10 0.4970 g Total Mass amiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Ref 10 amiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Ref 10 amiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Ref 10 amiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Ref 10 amiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Ref amiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Ref amiconductor devices the Second to the class of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration ot below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obt: Licom/global/eng/pages/offerings/industries/chemicals/plastics/	1.100 100.000 lecast Direct the best of I tion of the c	5.467 497.000 iive) and with Microchip Tec	11,000 1,000,000 EU	13.47	ANHYDRIDE EPOXY RESIN Total (mg)	Trade Secret Trade Secret Total Chip (Die) 7440-21-3	9 8 100.00 % of Total Weight 100	2.71	
O.4970 g Total Mass TOTALS: 10 O.4970 g Total Mass miconductor device and its homogenous materials comply with EU Directive 2002/35/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. emical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to th orated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentratic not below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obt: I.com/global/eng/pages/offerings/industries/chemicals/plastics/ otective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the "reels" may be made from PVC plastic. hip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorp iginal packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorp	the best of I tion of the c	497.000 live) and with Microchip Tec	1,000,000 EU	13.47	Total (mg)	Trade Secret Total Chip (Die) 7440-21-3	8 100.00 % of Total Weight 100	2.71	
miconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. International substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the orated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration not below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtri- l.com/global/eng/pages/offerings/industries/chemicals/plastics/ otective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the "reels" may be made from PVC plastic.	the best of I tion of the c	Microchip Tec	-	13.47	Total (mg)	Chip (Die) 7440-21-3	% of Total Weight	2.71	
miconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Rec ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. International substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the orated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration not below the threshold of regulatory concern for any regulatory scheme world-wide. g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtri- l.com/global/eng/pages/offerings/industries/chemicals/plastics/ otective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the "reels" may be made from PVC plastic.	the best of I tion of the c	Microchip Tec	-	13.47		Chip (Die) 7440-21-3	% of Total Weight	2.71	
g compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obta I.com/global/eng/pages/offerings/industries/chemicals/plastics/ otective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the "reels" may be made from PVC plastic. hip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorp iginal packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorp			stance, if			Total	100.00		
"reels" may be made from PVC plastic. hip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorp iginal packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Inco	otain a test i	eport at		2.09	(mg) Total	Wire Bond	% of Total Weight	0.42	
riginal packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Inc.	the packing	slip on the ou	uter box and		Doped Gold	7440-57-5	100		
ation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and ra ed only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These es ants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.	ncorporated d by raw ma raw materia	cannot guara aterial supplie I suppliers. In	antee the ers. Supplier nformation is		<u></u>	Total	100.00		
hip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. T ties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. T ions, sales order acknowledgement, and invoices.	e. These are	provided in M	licrochip's	5.47	(mg) I otal	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.1	
hip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct o ise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independe Certificate of Compliance for semiconductor products.	or indirect				Tin	7440-31-5	100.00		
		inty test repor	15 (303) 01			Total	100.00		

MICROCHIP Semiconductor Devic	e Type: MS 100 QF	9 14x20x2.7 TS		nation Base A pper Alloy (C			Package Hom	ogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Iotal			1175.15	(Mold Compound	% ot Total Weight	69.56
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1175.15	(mg) Total	wola Compouna	% of Total Weight	69.56
Silica Fused	60676-86-0	Mold Compound	61.401	1037.302	614,006		Silica Fused	60676-86-0	88.27	
Epoxy Resin	Trade Secret	Mold Compound	4.341	73.329	43,405		Epoxy Resin	Trade Secret	6.24	
Phenol Resin	Trade Secret	Mold Compound	3.610	60.990 3.525	36,102 2.087		Phenol Resin	Trade Secret	5.19 0.30	
Carbon Black	1333-86-4	Mold Compound	0.209	3.525	2,087		Carbon Black	1333-86-4 Total	0.30	
Copper Nickel	7440-50-8 7440-02-0	Lead Frame Lead Frame	24.153 0.644	408.043		100.10	/ \ T / I			
					6,441	428.43	(mg) Total	Lead Frame	% of Total Weight	25.36
Silver	7440-22-4 7440-21-3	Lead Frame	0.423	7.151	4,233		Copper Nickel	7440-50-8 7440-02-0	95.241	
Silicon Magnesium	7440-21-3 7439-95-4	Lead Frame	0.114	1.928 0.428	1,141 254		Nickel Silver	7440-02-0 7440-22-4	2.54	
Silver	7439-95-4 7440-22-4	Die Attach	0.025	0.634	375		Silver	7440-22-4 7440-21-3	0.45	
Epoxy Resin	Trade secret	Die Attach	0.005	0.034	50		Magnesium	7439-95-4	0.45	
Diluent	Trade secret	Die Attach	0.005	0.084	50			Total	100.00	
Hardener	Trade secret	Die Attach	0.003	0.042	25	0.84	(mg) Total	Die Attach	% of Total Weight	0.05
Silicon	7440-21-3	Chip (Die)	3.390	57.271	33.900	0.01	Silver	7440-22-4	75	0.00
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.069	1.162	688		Epoxy Resin	Trade secret	10.00	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.001	0.021	12		Diluent	Trade secret	10.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.570	26.524	15,700		Hardener	Trade secret	5.00	
	•	TOTALS:	100.000	1,689.400	1.000.000			Total	100.00	
	comply with EU Directive 2	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	ctive) and with	EU	57.27	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	3.39
his semiconductor device and its homogenous materials irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified	comply with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	ctive) and with	EU	57.27		Chip (Die)	% of Total Weight	3.39
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifier a chemical substance is absent from the list above, the c corporated's knowledge and belief as of the date of this	comply with EU Directive 2 d via internal design contro chemical substance is NOT document, there is no credi	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer	to the best of	Microchip Teo	chnology .	57.27		Chip (Die) 7440-21-3	% of Total Weight	3.39 0.07
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the coroporated's knowledge and belief as of the date of this vy, is not below the threshold of regulatory concern for a olding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemic	comply with EU Directive 2 d via internal design contro chemical substance is NOT document, there is no credi ny regulatory scheme work flammability standard for p als/plastics/	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL iQTM family of databases to	to the best of tration of the o obtain a test	Microchip Teo chemical subs report at	chnology stance, if		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond palladium coated	% of Total Weight 100 100.00	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the c iccorporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic	comply with EU Directive 2 d via internal design contro chemical substance is NOT document, there is no credi ny regulatory scheme work flammability standard for p als/plastics/	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concen I-wide.	to the best of tration of the o obtain a test	Microchip Teo chemical subs report at	chnology stance, if		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98 2	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verifier a chemical substance is absent from the list above, the c corporated's knowledge and belief as of the date of this i ny, is not below the threshold of regulatory concern for a lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shi ertain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informatio ieir original packing materials is true and correct to the b ompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade see	comply with EU Directive 2 d via internal design contro chemical substance is NOT document, there is no credi ny regulatory scheme work flammability standard for p rals/plastics/ pped are made from polyvi on in this form concerning est of its knowledge and be has been compiled based crets and some information parts and the average weig	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concern I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	to the best of tration of the o obtain a test Id the packing corporated's s y incorporated ided by raw m	Microchip Tec chemical subs report at y slip on the ou semiconducto d cannot guara aterial suppliers. In	chnology stance, if uter box and r devices in antee the ars. Supplier nformation is		Copper	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 98 2	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the c corporated's knowledge and belief as of the date of this sy, is not below the threshold of regulatory concern for a olding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemic te protective "tubes" in which the specific product is shi rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informati eir original packing materials is true and correct to the b mpleteness and accuracy of data in this form because it formation is often protected from disclosure as trade see ovided only as estimates of the average weight of these dopants, metals, and non-metal materials contained wit crochip Technology Incorporated does not provide any arrantices provided by Microchip Technology Incorporate totations, sales order acknowledgement, and invoices.	comply with EU Directive 2 d via internal design contro chemical substance is NOT document, there is no credi ny regulatory scheme work flammability standard for p ials/plastics/ pped are made from polyvi on in this form concerning est of its knowledge and be has been compiled based crets and some information parts and the average weig hin silicon devices (silicon warranty, express or implie d and its subsidiaries are co	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology In on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a tt of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarati untained in Microchip's standard terms and conditions of s	to the best of tration of the o obtain a test ld the packing corporated's s y Incorporated ided by raw m and raw materi se estimates d ion. The exclus iale. These are	Microchip Tec chemical subs report at semiconducto d cannot guara naterial suppliers. In lo not include sive, limited p provided in N	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct hicrochip's		Copper	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 98 2	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the c corporated's knowledge and belief as of the date of this dy, is not below the threshold of regulatory concern for a bolding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informati- ior original packing materials is true and correct to the b mpleteness and accuracy of data in this form because it original packing materials is true and correct to the sed opided only as estimates of the average weight of these dopants, metals, and non-metal materials contained wit crochip Technology Incorporated does not provide any urranties provided by Microchip Technology Incorporate totations, soles order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or	comply with EU Directive 2 d via internal design contro shemical substance is NOT document, there is no credi ny regulatory scheme work flammability standard for p als/plastics/ pped are made from polyvi on in this form concerning est of its knowledge and be has been compiled based crets and some information parts and the average weig hin silicon devices (silicon warranty, express or implie d and its subsidiaries are c changes to Material Conte the users' reliance on the ir	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer I-wide. lastics. You can access the UL iQTM family of databases to nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a nt of anticipated significant toxic metals components. The: C) in the finished parts.	to the best of tration of the o obtain a test ld the packing corporated's s y Incorporated ided by raw m nd raw materi se estimates d ion. The exclus- iale. These are ect or indirect	Microchip Tec chemical subs report at semiconducto d cannot guard aterial supplies. In lo not include sive, limited p provided in N , consequentia	chnology stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct flicrochip's al or	1.18	Copper Palladium	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin /	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.07

MICROCHIP Semiconductor Devi	ice Type: NU TQFP '	28 14x14x1mm (Z2)		ation Base A oper Alloy (C			Package Hom	nogeneous Materials		JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% lotal			372.52	(mg) Total	Mold Compound	% ot Total Weight	66.82
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		(5,			
Silica Fused	60676-86-0	Mold Compound	58.982	328.825	589,820		Silica Fused	60676-86-0	88.27	
Epoxy Resin	Trade Secret	Mold Compound	4.170	23.245	41,696		Epoxy Resin	Trade Secret	6.24	
Phenol Resin Carbon Black	Trade Secret 1333-86-4	Mold Compound Mold Compound	3.468 0.200	19.334 1.118	34,680 2,005		Phenol Resin Carbon Black	Trade Secret 1333-86-4	5.19 0.30	
Copper	7440-50-8	Lead Frame	25.658	143.043	256,579		Carbon Black	Total		
Nickel	7440-50-8	Lead Frame	0.684	3.815	6.843	150.19	(mg) Total	Lead Frame	% of Total Weight	26.94
Silver	7440-02-0	Lead Frame	0.450	2.507	4,496	150.19	Copper	7440-50-8	95.24	26.94
Silicon	7440-22-4	Lead Frame	0.430	0.676	1,212		Nickel	7440-02-0	2.54	
Magnesium	7440-21-3 7439-95-4	Lead Frame	0.027	0.676	269		Silver	7440-02-0	2.54	
Silver	7439-95-4 7440-22-4	Die Attach	0.027	0.150	525		Silver	7440-22-4	0.45	
Epoxy Resin	Trade secret	Die Attach	0.007	0.039	70		Magnesium	7439-95-4	0.43	
Diluent	Trade secret	Die Attach	0.007	0.039	70		magnooran	Total		9
Hardener	Trade secret	Die Attach	0.004	0.020	35	0.39	(mg) Total	Die Attach	% of Total Weight	0.07
Silicon	7440-21-3	Chip (Die)	4.760	26.537	47,600	0.00	Silver	7440-22-4	75	0.07
Copper	7440-50-8	Wire Bond Copper palladium coated (CuPd)	0.246	1.369	2,456		Epoxy Resin	Trade secret	10.00	
Palladium	7440-05-3	Wire Bond Copper palladium coated (CuPd)	0.004	0.024	44		Diluent	Trade secret	10.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.160	6.467	11,600		Hardener	Trade secret	5.00	
		TOTALS:	100.000	557.500	1.000.000			Total		9
	0 5575	g Total Mass			.,,	26.54	Total (mg)	Chip (Die)	% of Total Weight	4.76
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directiv									100	
•	•	s, supplier declarations, and /or analytical test data.						Total		
chemical substance is absent from the list above, the prporated's knowledge and belief as of the date of thi , is not below the threshold of regulatory concern for	e chemical substance is NOT s document, there is no cred any regulatory scheme worl	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer I-wide.	ntration of the	chemical subs		1.39	(mg) Total	Total Wire Bond Copper palladium coated (CuPd)		0.25
chemical substance is absent from the list above, the proprated's knowledge and belief as of the date of thi , is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 V	e chemical substance is NOT s document, there is no cred any regulatory scheme worl 0 flammability standard for p	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concert	ntration of the	chemical subs		1.39	(mg) Total Copper	Wire Bond Copper palladium	100.00	0.25
chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of thi y, is not below the threshold of regulatory concern for olding compounds used by Microchip meet the UL94 V p://ul.com/global/eng/pages/offerings/industries/chem e protective "tubes" in which the specific product is s	e chemical substance is NOT s document, there is no cred any regulatory scheme worl 0 flammability standard for p icals/plastics/	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer I-wide.	ntration of the o	chemical subs	stance, if	1.39		Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.25
a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of thi y, is not below the threshold of regulatory concern for Jolding compounds used by Microchip meet the UL94 V tp://ul.com/global/eng/pages/offerings/industries/chem e protective "tubes" in which the specific product is s rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informa eir original packing materials is true and correct to the mpleteness and accuracy of data in this form because formation is often protected from disclosure as trade s	e chemical substance is NOT s document, there is no cred any regulatory scheme worl 0 flammability standard for p icals/plastics/ hipped are made from polyvi ttion in this form concerning best of its knowledge and be it has been compiled based ecrets and some informatior e parts and the average weig	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers in to of anticipated significant toxic metals components. The	ntration of the o o obtain a test old the packing ncorporated's s ny Incorporated rided by raw m and raw materia	chemical subs report at slip on the ou semiconducto I cannot guara aterial supplie al suppliers. In	stance, if uter box and or devices in antee the ers. Supplier nformation is	1.39	Copper	Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total	100.00 % of Total Weight 98 2	0.25
chemical substance is absent from the list above, the orporated's knowledge and belief as of the date of thi y, is not below the threshold of regulatory concern for lding compounds used by Microchip meet the UL94 V p://ul.com/global/eng/pages/offerings/industries/chem e protective "tubes" in which the specific product is s tain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informa ir original packing materials is true and correct to the mpleteness and accuracy of data in this form because ormation is often protected from disclosure as trade s voided only as estimates of the average weight of thes dopants, metals, and non-metal materials contained w crochip Technology Incorporated does not provide an	e chemical substance is NOT s document, there is no cred any regulatory scheme worl 0 flammability standard for p icals/plastics/ hipped are made from polyvi ttion in this form concerning best of its knowledge and be it has been compiled based ecrets and some information e parts and the average weig ithin silicon devices (silicon y warranty, express or implie	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers in to of anticipated significant toxic metals components. The	ntration of the d o obtain a test old the packing ncorporated's s y Incorporated rided by raw m and raw materia se estimates d ion. The exclusion	chemical subs report at slip on the ou cannot guara aterial supplic al suppliers. In o not include sive, limited p	stance, if uter box and or devices in antee the ers. Supplier nformation is trace levels roduct	6.47	Copper	Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 98 2	0.25
chemical substance is absent from the list above, the proprated's knowledge and belief as of the date of thi- i, is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 V s://ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is s tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informar roginal packing materials is true and correct to the npleteness and accuracy of data in this form because wided only as estimates of the average weight of thes lopants, metals, and non-metal materials contained w rochip Technology Incorporated does not provide an ranties provided by Microchip Technology Incorporations, attoins, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates of the soft of the soft of soft of the soft of the soft of the rantions and soft of the soft of the soft of the attoins, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates of the soft of the soft of the soft of the soft of the read of the soft of the	e chemical substance is NOT s document, there is no cred any regulatory scheme worl 0 flammability standard for p icals/plastics/ hipped are made from polyvi tton in this form concerning best of its knowledge and be it has been compiled based ecrets and some information e parts and the average weig ithin silicon devices (silicon y warranty, express or implie ted and its subsidiaries are c or changes to Material Conte f the users' reliance on the in	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology II lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers a th of anticipated significant toxic metals components. The IC) in the finished parts.	ntration of the d o obtain a test old the packing ncorporated's s y Incorporated rided by raw m ind raw materi- se estimates d ion. The exclus sale. These are rect or indirect,	chemical subs report at slip on the ou eemiconducto I cannot guara aterial suppliers. In o not include sive, limited p provided in N , consequentia	stance, if uter box and ir devices in antee the ars. Supplier nformation is trace levels roduct flicrochip's al or		Copper Palladium	Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 98 2 100.00	
chemical substance is absent from the list above, the proprated's knowledge and belief as of the date of thi i, is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 V b://ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is a tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informar ir original packing materials is true and correct to the npleteness and accuracy of data in this form because irmation is often protected from disclosure as trade s uided only as estimates of the average weight of these lopants, metals, and non-metal materials contained w rochip Technology Incorporated does not provide an ranties provided by Microchip Technology Incorpora tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates rowise, suffered by users or third parties as a result o	e chemical substance is NOT s document, there is no cred any regulatory scheme worl 0 flammability standard for p icals/plastics/ hipped are made from polyvi tton in this form concerning best of its knowledge and be it has been compiled based ecrets and some information e parts and the average weig ithin silicon devices (silicon y warranty, express or implie ted and its subsidiaries are c or changes to Material Conte f the users' reliance on the in	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concer- l-wide. lastics. You can access the UL iQTM family of databases t nyl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology In lief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a to of anticipated significant toxic metals components. The IC) in the finished parts. d, with respect to the information provided in this declarat ontained in Microchip's standard terms and conditions of an to clarations and shall not be liable for any damages, di	ntration of the d o obtain a test old the packing ncorporated's s y Incorporated rided by raw m ind raw materi- se estimates d ion. The exclus sale. These are rect or indirect,	chemical subs report at slip on the ou eemiconducto I cannot guara aterial suppliers. In o not include sive, limited p provided in N , consequentia	stance, if uter box and ir devices in antee the ars. Supplier nformation is trace levels roduct flicrochip's al or		Copper Palladium (mg) Total	Wire Bond Copper palladium coated (CuPd) 7440-50-8 7440-05-3 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00 % of Total Weight 98 2 100.00 % of Total Weight 100.00	1.16

				nination Base Copper Alloy				ogeneous Materials: a.g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Devic	ce Type: PH 144 (Lead) TQFI									63
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	467.72	(mg) Total	Mold Compound	% ot Total Weight	68.23
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.996	397.559	579,955		Silica, vitreous (or fused)	60676-86-0	85.0000	
Epoxy Resin	Trade Secret	Mold Compound	5.936	40.691	59,360		Epoxy Resin	Trade Secret	8.7000	
Phenolic Resin	Trade Secret	Mold Compound	4.094	28.063	40,938		Phenolic Resin	Trade Secret	6.0000	
Carbon Black	1333-86-4	Mold Compound	0.205	1.403	2,047		Carbon Black	1333-86-4	0.3000	
Copper	7440-50-8	Lead Frame	26.955	184.775	269,547			Total	100.00	
Tin	7440-31-5	Lead Frame	0.069	0.474	692	189.68	(mg) Total	Lead Frame	% of Total Weight	27.67
Silver	7440-22-4	Lead Frame	0.527	3.613	5,271]	Copper	7440-50-8	97.42]
Zinc	7440-66-6	Lead Frame	0.050	0.341	498	1	Tin	7440-31-5	0.25	l
Chromium	7440-47-3	Lead Frame	0.069	0.474	692	1	Silver	7440-22-4	1.91	1
Silver (Ag)	7440-22-4	Die Attach	0.423	2.902	4,233	1	Zinc	7440-66-6	0.18	1
ANHYDRIDE	Trade Secret	Die Attach	0.046	0.315	459		Chromium	7440-47-3	0.25	
EPOXY RESIN	Trade Secret	Die Attach	0.041	0.280	408			Total		
Silicon	7440-21-3	Chip (Die)	2.090	14.327	20,900	3.50	(mg) Total	Die Attach	% of Total Weight	0.51
Doped Gold	7440-57-5	Wire Bond	0.280	1.919	2,800		Silver (Ag)	7440-22-4	83.00	
Tin	7440-31-5 Plating on	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.220	8.363	12,200		ANHYDRIDE	Trade Secret	9.00	
		TOTALS:	100.000	685.500	1,000,000		EPOXY RESIN	Trade Secret	8.00	Į
	0.6855 g Tota	al Mass						Total	100.00	
semiconductor device and its homogenous materials			S Recast Dire	ective) and wit	h EU Directive	14.33	(mg) Total	Chip (Die)	% of Total Weight	2.09
2/53/EC (End-of-Life Vehicles (ELV) Directive).						14.55	(ing) rotai	Cliip (Die)	/8 OF FOLAI Weight	2.05
pliance with the above EU Directives has been verified	d via internal decign controls, cumpli									
	u 11	· · ·	to the best o	f Microchin T	abbalagy		Doped Silicon	7440-21-3 Total	100 100.00	
chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this o t below the threshold of regulatory concern for any re	chemical substance is NOT an intenti document, there is no credible reaso gulatory scheme world-wide.	onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concer	tration of the	e chemical sub			Doped Silicon			
· chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this c	chemical substance is NOT an intenti document, there is no credible reaso gulatory scheme world-wide. flammability standard for plastics. Yu	onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concer	tration of the	e chemical sub		1.92	Doped Silicon			
chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this ot below the threshold of regulatory concern for any re- ding compounds used by Microchip meet the UL94 V0 f	chemical substance is NOT an intenti document, there is no credible reaso gulatory scheme world-wide. flammability standard for plastics. Y als/plastics/	ional ingredient in the semiconductor device and, n to believe that the unavoidable impurity concer ou can access the UL iQTM family of databases to	tration of the	e chemical sub t report at	ostance, if any,	1.92	<u> </u>	Total	100.00	
chemical substance is absent from the list above, the c prorated's knowledge and belief as of the date of this o ot below the threshold of regulatory concern for any re- ding compounds used by Microchip meet the UL94 V0 i ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship	chemical substance is NOT an intenti document, there is no credible reaso gulatory scheme world-wide. flammability standard for plastics. Ye als/plastics/ pped are made from polyvinyl chlorie on in this form concerning substance est of its knowledge and belief, as of has been compiled based on the rar crets and some information may not parts and the average weight of antic	onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concer- ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to ho es restricted by ROHS in Microchip Technology In the date listed in this form. Microchip Technolog ges provided in Material Safety Data Sheets prov have been provided by subcontract assemblers a cipated significant toxic metals components. The	tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw r nd raw mater	e chemical sub t report at g slip on the o semiconduct ed cannot gua naterial suppliers.	ostance, if any, outer box and or devices in rantee the iers. Supplier Information is	1.92	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.28
. chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this of the below the threshold of regulatory concern for any re- ding compounds used by Microchip meet the UL94 V0 i ://ul.com/global/eng/pages/offerings/industries/chemic- protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. oochip Technology Incorporated believes the information or original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec	chemical substance is NOT an intent document, there is no credible reaso gulatory scheme world-wide. flammability standard for plastics. Ye als/plastics/ pped are made from polyvinyl chlori on in this form concerning substance est of its knowledge and belief, as of has been compiled based on the rar crets and some information may not parts and the average weight of antic hin silicon devices (silicon IC) in the warranty, express or implied, with re	onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concer- ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to ho es restricted by RoHS in Microchip Technology In the date listed in this form. Microchip Technolog ges provided in Material Safety Data Sheets prov have been provided by subcontract assemblers a cipated significant toxic metals components. The finished parts.	tration of the o obtain a tes ld the packin iccorporated's y Incorporate ided by raw r ind raw mater se estimates	e chemical sub t report at g slip on the o semiconduct d cannot gua material suppliers. do not includo usive, limited	ostance, if any, outer box and or devices in rantee the iers. Supplier Information is e trace levels product	1.92	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight 100.00	0.28
chemical substance is absent from the list above, the c prorated's knowledge and belief as of the date of this of the below the threshold of regulatory concern for any re- ding compounds used by Microchip meet the UL94 V0 i ://ul.com/global/eng/pages/offerings/industries/chemic- protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec opants, metals, and non-metal materials contained with cochip Technology Incorporated does not provide any va- ranties provided by Microchip Technology Incorporated	chemical substance is NOT an intenti document, there is no credible reaso gulatory scheme world-wide. flammability standard for plastics. Ye als/plastics/ pped are made from polyvinyl chlorie on in this form concerning substance est of its knowledge and belief, as of has been compiled based on the rar crets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re d and its subsidiaries are contained i changes to Material Content Declara- the users' reliance on the information	onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concer- ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to ho es restricted by ROHS in Microchip Technology In the date listed in this form. Microchip Technolog ges provided in Material Safety Data Sheets prov have been provided by subcontract assemblers a cipated significant toxic metals components. The finished parts. spect to the information provided in this declarati in Microchip's standard terms and conditions of s ations and shall not be liable for any damages, dir	tration of the o obtain a tes Id the packin corporated's y Incorporate ided by raw r ind raw mater se estimates ion. The exclu- iale. These ar ect or indirec	e chemical sub t report at g slip on the o semiconduct ed cannot gua material suppliers. do not includo usive, limited e provided in	ostance, if any, outer box and or devices in rantee the iers. Supplier Information is e trace levels product Microchip's tial or		(mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100.00 % of Total Weight 100.00 100.00	. 0.28

	2: ST 08 (Lead)	TSSOP 4.4mm (C5/CN/A4)		nation Base A pper Alloy (C	-		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total	[19.49	(mg) Total	Mold Compound	% ot Total Weight	59.06
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	19.49	6		•	59.06
Silica, vitreous	60676-86-0	Mold Compound	50.201	16.566	502,010		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide) Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret Trade Secret	Mold Compound Mold Compound	3.617 3.617	1.194 1.194	36,174 36,174		Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	6.13 6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.447	0.478	14.470		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.177	0.058	1,772		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	30.020	9.907	300.200		Calboli Diack	Total		l
Nickel	7440-02-0	Lead Frame	0.801	0.264	8,006	10.40	(mg) Total	Lead Frame	% of Total Weight	31.52
Silver	7440-22-4	Lead Frame	0.526	0.174	5.261	10.40	Copper	7440-50-8	95.24	31.32
Silicon	7440-22-4 7440-21-3	Lead Frame	0.142	0.047	1,418		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.032	0.010	315		Silver	7440-02-0	1.67	
Silver	7439-93-4	Die Attach	0.840	0.277	8,400		Silicon	7440-22-4 7440-21-3	0.45	
Diester Resin	94-80-4	Die Attach	0.168	0.055	1,680		Magnesium	7439-95-4	0.43	
Functionalized Urethane Resin	72869-86-4	Die Attach	0.056	0.018	560		Wagnesium	Total		
Epoxy Resin	9003-36-5	Die Attach	0.028	0.009	280	0.37	() = ()		% of Total Weight	1.12
						0.37	(mg) Total	Die Attach		1.12
Epoxy Resin	13561-08-5	Die Attach	0.028	0.009	280		Silver	7440-22-4	75	
Silicon	7440-21-3	Chip (Die)	6.300	2.079	63,000	_	Diester Resin	94-80-4	15	
Gold	7440-57-5	Wire Bond	0.180	0.059	1,800	Fun	ctionalized Urethane Resin	72869-86-4	5	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.820 100.000	0.601 33.000	18,200 1.000.000		Epoxy Resin		3	
		q Total Mass	100.000	33.000	1,000,000		Epoxy Resin	13561-08-5 Total	ů	
pliance with the above EU Directives has been verified via inte hemical substance is absent from the list above, the chemical roorated's knowledge and belief as of the date of this docume	substance is NOT a	an intentional ingredient in the semiconductor device and					Doped Silcon	7440-21-3 Total	100 1 00.00	
r, is not below the threshold of regulatory concern for any regul lding compounds used by Microchip meet the UL94 V0 flammat p/ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped are	atory scheme world bility standard for pl tics/	I-wide. lastics. You can access the UL iQTM family of databases t	o obtain a test	report at		0.06	(mg) Total	Wire Bond	% of Total Weight	0.18
tain "reels" may be made from PVC plastic.	e made from polyvir	in chionae (PVC) plastic. Window envelopes used to ho	old the packing	silp on the ot	iter box and		Doped Gold	7440-57-5	100	
icrochip Technology Incorporated believes the information in thi eir original packing materials is true and correct to the best of its smpleteness and accuracy of data in this form because it has bee formation is often protected from disclosure as trade secrets and ovoided only as estimates of the average weight of these parts an i dopants, metals, and non-metal materials contained within silice	s knowledge and be en compiled based o d some information d the average weigh on devices (silicon l	lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a ht of anticipated significant toxic metals components. The C) in the finished parts.	gy Incorporated vided by raw m and raw materi ese estimates d	l cannot guara aterial supplie al suppliers. Ir o not include	Intee the ers. Supplier Information is trace levels			Total	100.00	
icrochip Technology Incorporated does not provide any warranty arranties provided by Microchip Technology Incorporated and its uotations, sales order acknowledgement, and invoices. icrochip disclaims any duty to notify users of updates or change herwise, suffered by users or third parties as a result of the user	s to Material Conter	ntained in Microchip's standard terms and conditions of an anticontract of the standard terms and shall not be liable for any damages, di	sale. These are rect or indirect	provided in M , consequentia	licrochip's al or	0.60	(mg) Total	leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	% of Total Weight	1.82
nerwise, surfered by users of third parties as a result of the users this Certificate of Compliance for semiconductor products.	s renance on the IN	ionnation in waterial Content Declarations (MCD) of Inde	pendent mira p	arty test repol	15 (303) Or	33.000	Tin	7440-31-5 Total	100.00	100.0

Semiconductor Devic	ce Type: ST 14 (Lead)	TSSOP 4.4mm (D4 / DH)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% I otal				()= ()			
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	28.10	(mg) Total	Mold Compound	% ot Total Weight	46.84
Silica, vitreous (or fused)	60676-86-0	Mold Compound	39.814	23.888	398,140		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.075	2.445	40,751		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin Carbon Black	Trade Secret 1333-86-4	Mold Compound Mold Compound	2.810 0.141	1.686 0.084	28,104		Phenolic Resin	Trade Secret	6.00	
	7440-50-8	Lead Frame	43.249	25.949	1,405 432,489		Carbon Black	1333-86-4 Total	0.30]
Copper Nickel	7440-50-8	Lead Frame	43.249	25.949	432,489	07.05				45.41
Silver	7440-02-0 7440-22-4	Lead Frame	0.758	0.692	7.579	27.25	(mg) Total	Lead Frame	% of Total Weight	45.41
Silver	7440-22-4 7440-21-3	Lead Frame	0.758	0.455	2.043		Copper Nickel	7440-50-8 7440-02-0	95.24 2.54	
Magnesium	7439-95-4	Lead Frame	0.204	0.123	2,043		Silver	7440-02-0 7440-22-4	2.54	
Silver	7439-95-4 7440-22-4	Die Attach	1.214	0.027				7440-22-4 7440-21-3	0.45	
Epoxy resin	Trade Secret	Die Attach Die Attach	0.328	0.728	12,136 3,280		Silicon Magnesium	7440-21-3 7439-95-4	0.45	
							Magnesium			
Metal oxide	Trade Secret	Die Attach	0.049	0.030	492			Total		
Gamma-butyrolactone	96-48-0	Die Attach	0.049	0.030	492	0.98	(mg) Total	Die Attach	% of Total Weight	1.64
Silicon	7440-21-3	Chip (Die)	3.340	2.004	33,400		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.490	0.294	4,900		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.280	1.368	22,800 1.000.000		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	60.000	1,000,000		Gamma-butyrolactone	96-48-0 Total	3 100.00	
		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	5 Recast Direc	cive) and with						
pliance with the above EU Directives has been verified	d via internal design controls		to the back of	ŗ		2.00	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	3.34
npliance with the above EU Directives has been verifier chemical substance is absent from the list above, the o rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0	d via internal design controls chemical substance is NOT a document, there is no credit iny regulatory scheme world flammability standard for pla	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer	ntration of the	Microchip Teo	:hnology	0.29		7440-21-3	100	0.49
orporated's knowledge and belief as of the date of this r, is not below the threshold of regulatory concern for a lding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemic	d via internal design controls chemical substance is NOT a document, there is no credit iny regulatory scheme world flammability standard for pla als/plastics/	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide.	ntration of the o obtain a test	Microchip Tee chemical subs report at	chnology stance, if		Doped Silicon	7440-21-3 Total	100	
mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the o orporated's knowledge and belief as of the date of this i, is not below the threshold of regulatory concern for a iding compounds used by Microchip meet the UL94 V0 o://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatii ir original packing materials is true and correct to the b npleteness and accuracy of data in this form because it vided only as estimates of the average weight of these lopants, metals, and non-metal materials contained wit rochip Technology Incorporated does not provide any	d via internal design controls chemical substance is NOT a document, there is no credit uny regulatory scheme world flammability standard for pli- cals/plastics/ ipped are made from polyvin on in this form concerning s est of its knowledge and bel t has been compiled based o crets and some information i parts and the average weigh thin silicon devices (silicon Id warranty, express or implied	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir ief, as of the date listed in this form. Microchip Technolog n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts.	ntration of the o obtain a test old the packing ncorporated's : yy Incorporated vided by raw m and raw materi use estimates d	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara laterial supplie al supplieral lo not include sive, limited p	chnology stance, if iter box and r devices in untee the irs. Supplier formation is trace levels roduct		(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin /	100 100.00 % of Total Weight 100 100.00	
npliance with the above EU Directives has been verified chemical substance is absent from the list above, the o proprated's knowledge and belief as of the date of this , is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 c://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati r original packing materials is true and correct to the b spleteness and accuracy of data in this form because it romation is often protected from disclosure as trade sev vided only as estimates of the average weight of these lopants, metals, and non-metal materials contained wit rochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorpora- tations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or	d via internal design controls chemical substance is NOT a document, there is no credit uny regulatory scheme world flammability standard for pla cals/plastics/ ipped are made from polyvin on in this form concerning s uest of its knowledge and bel t has been compiled based o crets and some information n parts and the average weigh thin silicon devices (silicon Id warranty, express or implied d and its subsidiaries are co r changes to Material Conten the users' reliance on the inf	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir fef, as of the date listed in this form. Microchip Technology Ir n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts.	ntration of the o obtain a test old the packing ncorporated's : yy Incorporate yy Incorporate mand raw materi se estimates d cion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guars laterial suppliers. In lo not include sive, limited p provided in N	chnology stance, if iter box and r devices in intee the rs. Supplier formation is trace levels roduct licrochip's al or	0.29	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight	0.49
npliance with the above EU Directives has been verifier chemical substance is absent from the list above, the o roporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 b://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati ir original packing materials is true and correct to the b pleteness and accuracy of data in this form because is vided only as estimates of the average weight of these lopants, metals, and non-metal materials contained wit rochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorporate tations, sales order acknowledgement, and invoices.	d via internal design controls chemical substance is NOT a document, there is no credit uny regulatory scheme world flammability standard for pla cals/plastics/ ipped are made from polyvin on in this form concerning s uest of its knowledge and bel t has been compiled based o crets and some information n parts and the average weigh thin silicon devices (silicon Id warranty, express or implied d and its subsidiaries are co r changes to Material Conten the users' reliance on the inf	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology Ir fef, as of the date listed in this form. Microchip Technology In a the ranges provided in Material Safety Data Sheets prov- may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts. , with respect to the information provided in this declarat ntained in Microchip's standard terms and conditions of s	ntration of the o obtain a test old the packing ncorporated's : yy Incorporate yy Incorporate mand raw materi se estimates d cion. The exclu sale. These are rect or indirect	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guars laterial suppliers. In lo not include sive, limited p provided in N	chnology stance, if iter box and r devices in intee the rs. Supplier formation is trace levels roduct licrochip's al or	0.29	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	100 100.00 % of Total Weight 100 100.00	0.49

ICROCHIP Semiconductor Device	e Type: ST 16 (Lead) T	SSOP 4.4mm (D8)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	22.50	(mg) Total	Mold Compound	% ot Total Weight	34.62
Silica, vitreous (or fused)	60676-86-0	Mold Compound	29.427	19.128	294,270		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	3.012	1.958	30,119		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.077	1.350	20,772		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.104	0.068	1,039		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44.468	28.904	444.680		Garbert Black	Total	100.00	
Nickel	7440-02-0	Lead Frame	1.186	0.771	11,859	30.35	(mg) Total	Lead Frame	% of Total Weight	46.69
Silver	7440-02-0	Lead Frame	0.779	0.507	7,793	30.35		7440-50-8	95.24	40.09
Silicon			0.779	0.507	2,101		Copper	7440-50-8 7440-02-0	95.24 2.54	
	7440-21-3 7439-95-4	Lead Frame	0.210	0.137	467		Nickel		2.54	
Magnesium		Lead Frame					Silver	7440-22-4		
Silver	7440-22-4	Die Attach Die Attach	2.472 0.668	1.607 0.434	24,716 6,680		Silicon	7440-21-3 7439-95-4	0.45 0.10	
Epoxy resin	Trade Secret						Magnesium			
Metal oxide	Trade Secret	Die Attach	0.100	0.065	1,002			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.100	0.065	1,002	2.17	(mg) Total	Die Attach	% of Total Weight	3.34
Silicon	7440-21-3	Chip (Die)	12.340	8.021	123,400		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.610	0.397	6,100		Epoxy resin	Trade Secret	20	
Tin	7440-31-5 Pla	ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.400	1.560	24,000		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	65.000	1,000,000		Gamma-butyrolactone	96-48-0	3	
	0.0650 a	Total Mass						Total	100.00	
ance with the above EU Directives has been verified	I via internal design controls,			ŗ	EU	8.02	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight 100	12.34
liance with the above EU Directives has been verified emical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d	l via internal design controls, hemical substance is NOT an locument, there is no credible	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer			hnology	8.02				12.34
ance with the above EU Directives has been verified mical substance is absent from the list above, the cl orated's knowledge and belief as of the date of this d not below the threshold of regulatory concern for ar g compounds used by Microchip meet the UL94 V0 f	I via internal design controls, hemical substance is NOT an locument, there is no credible ny regulatory scheme world-w flammability standard for plas	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer	ntration of the	chemical subs	hnology	0.40		7440-21-3	100	0.61
ance with the above EU Directives has been verified mical substance is absent from the list above, the cl orated's knowledge and belief as of the date of this d not below the threshold of regulatory concern for ar g compounds used by Microchip meet the UL94 V0 f I.com/global/eng/pages/offerings/industries/chemica otective "tubes" in which the specific product is ship	I via internal design controls, hemical substance is NOT an locument, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer ide.	ntration of the	chemical subs	tance, if		Doped Silicon	7440-21-3 Total	100 100.00	
porated's knowledge and belief as of the date of this d s not below the threshold of regulatory concern for ar ng compounds used by Microchip meet the UL94 V0 f (ul.com/global/eng/pages/offerings/industries/chemicz rotective "tubes" in which the specific product is ship n "reels" may be made from PVC plastic. chip Technology Incorporated believes the informatio original packing materials is true and correct to the be leteness and accuracy of data in this form because it nation is often protected from disclosure as trade sec	I via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/ opped are made from polyvinyl on in this form concerning sut set of its knowledge and belief has been compiled based on rets and some information mi parts and the average weight i	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho stances restricted by RoHS in Microchip Technology In a so of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets pro- ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	ntration of the o obtain a test old the packing ncorporated's gy Incorporated's vided by raw m and raw materi	chemical subs report at g slip on the ou semiconducto d cannot guara naterial supplie al suppliers. Ir	thnology tance, if ter box and r devices in intee the rs. Supplier formation is		Opped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
bliance with the above EU Directives has been verified nemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d s not below the threshold of regulatory concern for ar ng compounds used by Microchip meet the UL94 V0 f /ul.com/global/eng/pages/offerings/industries/chemica rotective "tubes" in which the specific product is ship n "reels" may be made from PVC plastic. chip Technology Incorporated believes the informatio original packing materials is true and correct to the be leteness and accuracy of data in this form because it hation is often protected from disclosure as trade sec ded only as estimates of the average weight of these p pants, metals, and non-metal materials contained with chip Technology Incorporated does not provide any v	I via internal design controls, hemical substance is NOT an document, there is no credible ny regulatory scheme world-w flammability standard for plas als/plastics/ opped are made from polyvinyl on in this form concerning sut est of its knowledge and belief has been compiled based on rets and some information mi- parts and the average weight of nin silicon devices (silicon IC) warranty, express or implied, v	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho stances restricted by RoHS in Microchip Technology In a so of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets pro- ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The	ntration of the o obtain a test old the packing ncorporated's yy Incorporate vided by raw m and raw materi use estimates o tion. The exclu	chemical subs report at g slip on the ou semiconducto d cannot guara naterial supplie lal suppliers. Ir lo not include sive, limited pi	chnology tance, if iter box and r devices in intee the rs. Supplier formation is trace levels		Opped Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	
liance with the above EU Directives has been verified emical substance is absent from the list above, the cl oparated's knowledge and belief as of the date of this d s not below the threshold of regulatory concern for ar ng compounds used by Microchip meet the UL94 V0 f ul.com/global/eng/pages/offerings/industries/chemica rotective "tubes" in which the specific product is ship n "reels" may be made from PVC plastic. chip Technology Incorporated believes the informatio original packing materials is true and correct to the be leteness and accuracy of data in this form because it hation is often protected from disclosure as trade sec fed only as estimates of the average weight of these p pants, metals, and non-metal materials contained with chip Technology Incorporated does not provide any v nties provided by Microchip Technology Incorporated tons, sales order acknowledgement, and invoices. chip disclaims any duty to notify users of updates or	I via internal design controls, hemical substance is NOT an locument, there is no Oradina ny regulatory scheme world-w flammability standard for plas als/plastics/ opped are made from polyvinyl on in this form concerning sut est of its knowledge and belief has been compiled based on rests and some information mi- parts and the average weight of in silicon devices (silicon IC) warranty, express or implied, v d and its subsidiaries are cont changes to Material Content II he users' reliance on the infor	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concer- ide. tics. You can access the UL iQTM family of databases to chloride (PVC) plastic. "Window envelopes" used to ho stances restricted by RoHS in Microchip Technology Ir , as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets pro- of anticipated significant toxic metals components. The in the finished parts.	ntration of the o obtain a test old the packing ncorporated's y Incorporate y Incorporate y incorporate y incorporate se estimates c tion. The exclu sale. These are rect or indirect	chemical subs report at g slip on the ou semiconducto d cannot guars naterial suppliers. Ir lo not include sive, limited pi p provided in M c, consequentia	thnology tance, if r devices in intee the rs. Supplier iformation is trace levels roduct licrochip's al or	0.40	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.61

MICROCHIP Semiconductor Device	Turo: ST 20 (1			nation Base A pper Alloy (C	-		•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type. ST 20 (Lead)	"Contained In"	% Total	1						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	37.22	(mg) Total	Mold Compound	% ot Total Weight	47.72
Silica, vitreous (or fused)	60676-86-0	Mold Compound	40.562	31.638	405.620		Silica, vitreous (or fused)	60676-86-0	85.00	1
Epoxy Resin	Trade Secret	Mold Compound	4.152	3.238	41,516		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.863	2.233	28,632		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.143	0.112	1,432		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	40.725	31.766	407,251			Total	100.00	4
Nickel	7440-02-0	Lead Frame	1.086	0.847	10,861	33.35	(mg) Total	Lead Frame	% of Total Weight	
Nickei	7440-02-0	Lead I faille	1.000	0.047	10,001	33.35	(ing) rotai	Leau Flaille		42.70
Silver	7440-22-4	Lead Frame	0.714	0.557	7,137		Copper	7440-50-8	95.24	
Silicon	7440-22-4 7440-21-3	Lead Frame	0.192	0.150	1.924		Nickel	7440-02-0	2.54	
										4
Magnesium Silver	7439-95-4 7440-22-4	Lead Frame	0.043	0.033	428 13.172		Silver	7440-22-4 7440-21-3	1.67	4
	Trade Secret	Die Attach Die Attach	0.356	0.278	13,172 3.560		Silicon	7440-21-3 7439-95-4	0.45	4
Epoxy resin							Magnesium			1
Metal oxide	Trade Secret	Die Attach	0.053	0.042	534			Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.053	0.042	534	1.39	(mg) Total	Die Attach	% of Total Weight	1.78
Silicon	7440-21-3	Chip (Die)	4.690	3.658	46,900		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.540	0.421	5,400		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.510	1.958	25,100		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	78.000	1,000,000		Gamma-butyrolactone	96-48-0	3	
	0 0780	g Total Mass						Total	100.00	
Compliance with the above EU Directives has been verified v If a chemical substance is absent from the list above, the che Technology Incorporated's knowledge and belief as of the di chemical substance, if any, is not below the threshold of reg Molding compounds used by Microchip meet the UL94 V0 fla http://ul.com/global/eng/pages/offerings/industries/chemicals The protective "tubes" in which the specific product is shipp box and certain "reels" may be made from PVC plastic.	emical substance is NOT te of this document, the ulatory concern for any r mmability standard for p /plastics/	an intentional ingredient in the semiconductor de re is no credible reason to believe that the unavoid egulatory scheme world-wide. lastics. You can access the UL iQTM family of data	vice and, to the dable impurity o abases to obtai	concentration n a test report	of the at	0.42	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100 100.00	0.54
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correct cannot guarantee the completeness and accuracy of data in raw material suppliers. Supplier information is often protecte and raw material suppliers. Information is provided only as e components. These estimates do not include trace levels of Microchip Technology Incorporated does not provide any wa product warranties provided by Microchip Technology Incorp in Microchip's quotations, sales order acknowledgement, an	to the best of its knowle this form because it has d from disclosure as trac stimates of the average v dopants, metals, and nor rranty, express or implie porated and its subsidiar	edge and belief, as of the date listed in this form. M been compiled based on the ranges provided in M de secrets and some information may not have be weight of these parts and the average weight of an n-metal materials contained within silicon devices of ed, with respect to the information provided in this	licrochip Techri laterial Safety I en provided by ticipated signif (silicon IC) in the declaration. The	nology Incorpo Data Sheets pr subcontract a ricant toxic me he finished par he exclusive, li	orated rovided by issemblers itals rts. imited	1.96	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.51
Microchip disclaims any duty to notify users of updates or cl otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	users' reliance on the i						Tin	7440-31-5 Total	100.00 100.00	
						78.000	0			100.000

MICROCHIP Semiconductor Device Type	: QU8E 08	(Lead) USON/UDFN 2x2x0.55mm (QN)		ation Base / oper Alloy (C				nogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% I otal			9.40	(mg) Total	Mold Compound	% ot Total Weigh	t 75.18
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	5.40	(ing) rotai	•	/ot rotal Weigh	10:10
Silica, fused	60676-86-0	Mold Compound	67.662	8.458	676,620		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	3.646	0.456	36,462		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin Carbon Black	Trade Secret 1333-86-4	Mold Compound Mold Compound	3.646 0.226	0.456 0.028	36,462 2,255		Phenolic Resin	Trade Secret	4.85	
Copper	7440-50-8	Lead Frame	20.505	2,563	2,255		Carbon Black	1333-86-4 Total	0.30	ļ
Nickel	7440-50-8	Lead Frame	20.505	2.563	205,054 5,469	2.69	(mg) Total	Lead Frame	% of Total Weigh	
Silicon	7440-02-0		0.097	0.008	969	2.69				21.53
Magnesium	7440-21-3	Lead Frame	0.097	0.012	215		Copper Nickel	7440-50-8 7440-02-0	95.24 2.54	
Silver	7439-95-4	Lead Frame	0.359	0.003	3,593		Silicon	7440-02-0 7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.800	0.100	8.000		Magnesium	7439-95-4	0.45	
Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2.000		Silver	7439-95-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900		Oliver	Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100	0.13	(mg) Total	Die Attach	% of Total Weigh	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.890	0.111	8,900	0.15	Silver	7440-22-4	80.00	1.00
111	7440-31-3	Plating on external leads (pins) - Matter In/ annealed at 150°C for 1 hour TOTALS:		12.500	1.000.000		Epoxy Resin	Trade secret	20.00	
	0.0405	g Total Mass	100.000	12.500	1,000,000		Epuxy Resin	Total	100.00	1
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via inter if a chemical substance is absent from the list above, the chemical- ncorporated's knowledge and belief as of the date of this documen any, is not below the threshold of regulatory concern for any regula Molding compounds used by Microchip meet the UL94 V0 flammab http://ul.com/global/eng/pages/offerings/industries/chemicals/plasti The protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.	substance is NOT a t, there is no credil tory scheme world lity standard for pl cs/	an intentional ingredient in the semiconductor device and, ole reason to believe that the unavoidable impurity concen I-wide. astics. You can access the UL iQTM family of databases to	ntration of the	chemical sul	ostance, if	0.04	Gallium arsenide (mg) Total Doped Gold	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weigh 100.00 100.00	t 0.31
Microchip Technology Incorporated believes the information in this in their original packing materials is true and correct to the best of the completeness and accuracy of data in this form because it has Supplier information is often protected from disclosure as trade see Information is provided only as estimates of the average weight of include trace levels of dopants, metals, and non-metal materials co- Microchip Technology Incorporated does not provide any warranty, warranties provided by Microchip Technology Incorporated and its Microchip's quotations, sales order acknowledgement, and invoice	ts knowledge and been compiled bas rets and some infe hese parts and the ttained within silic express or implied subsidiaries are co	belief, as of the date listed in this form. Microchip Technol ed on the ranges provided in Material Safety Data Sheets p romation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con on devices (silicon IC) in the finished parts. d, with respect to the information provided in this declarati	ogy Incorpora provided by ra emblers and r nponents. Th ion. The exclu	ated cannot g aw material su aw material s ese estimates usive, limited	uarantee uppliers. uppliers. do not product	0.11	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weigh	t 0.89
Microchip disclaims any duty to notify users of updates or changes otherwise, suffered by users or third parties as a result of the users or of this Certificate of Compliance for semiconductor products.						12.50	Tin	7440-31-5 Total	100.00 1 00.00	100.000

	е Туре: QX6E 06 (Le	ead) XSON 1.5x1.5x0.45mm (QX)		nation Base opper Alloy ((•	nogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	4.18	(mg) Total	Mold Compound	% ot Total Weight	68.55
Silica. fused	60676-86-0	Mold Compound	61.695	3.763	616,950		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	3.325	0.203	33.247		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.325	0.203	33,247		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.206	0.013	2,057		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	23.696	1.445	236,960			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.632	0.039	6,320	1.52	(mg) Total	Lead Frame	% of Total Weight	24.88
Silicon	7440-21-3	Lead Frame	0.112	0.007	1,120		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.025	0.002	249		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.415	0.025	4,152		Silicon	7440-21-3	0.45	
Ag	7440-22-4	Die Attach	0.990	0.060	9,900		Magnesium	7439-95-4	0.10	
Epoxy resin	Trade secret	Die Attach	0.198	0.012	1,980		Silver	7440-22-4	1.67	
Aliphatic anhydride	Trade secret	Die Attach	0.066	0.004	660			Total	100.00	2
2-Butoxyethyl acetate	112-07-2	Die Attach	0.033	0.002	330	0.08	(mg) Total	Die Attach	% of Total Weight	1.32
Polymeric material	Trade secret	Die Attach	0.033	0.002	330		Ag	7440-22-4	75.00	
Silicon	1303-00-0	Chip (Die)	3.630	0.221	36,300		Epoxy resin	Trade secret	15.00	
Au	7440-57-5	Wire Bond	0.590	0.036	5,900		Aliphatic anhydride	Trade secret	5.00	
				0.000	10 200		2-Butoxyethyl acetate	112-07-2	2.50	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.030	0.063	10,300					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:		0.063 6.100	1,000,000		Polymeric material	Trade secret	3	
Tin		TOTALS:							3	
	0.0061	g Total Mass	100.000	6.100	1,000,000	0.22		Trade secret	3	
Tin is semiconductor device and its homogenous materials c mpliance with the above EU Directives has been verified v c chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this do	0.0061 omply with EU Directive 20 via internal design controls emical substance is NOT a	TOTALS: g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and	100.000 HS Recast Di d, to the best	6.100 rective) and w of Microchip	1,000,000 vith EU Technology	0.22	Polymeric material	Trade secret Total	3 100.00 % of Total Weight 100	3.63
is semiconductor device and its homogenous materials c mpliance with the above EU Directives has been verified v n chemical substance is absent from the list above, the ch	0.0061 omply with EU Directive 20 via internal design controls emical substance is NOT a ocument, there is no credib ammability standard for pla	TOTALS: g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce	100.000 HS Recast Di d, to the best entration of th	6.100 rective) and w of Microchip [•] ne chemical su	1,000,000 vith EU Technology	0.22	Polymeric material (mg) Total	Trade secret Total Chip (Die) 1303-00-0	3 100.00 % of Total Weight 100	3.63
is semiconductor device and its homogenous materials c impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this dc plding compounds used by Microchip meet the UL94 V0 fla	0.0061 omply with EU Directive 20 via internal design controls emical substance is NOT a ocument, there is no credib ammability standard for pla Is/plastics/	TOTALS: <u>g Total Mass</u> 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce istics. You can access the UL iQTM family of databases	100.000 HS Recast Di d, to the best entration of th to obtain a te	6.100 rective) and w of Microchip te chemical su est report at	1,000,000 /ith EU Technology ubstance, if		Polymeric material (mg) Total GaAs	Trade secret Total Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	3 100.00 % of Total Weight 100 % of Total Weight 100.00	3.63 0.59
is semiconductor device and its homogenous materials c impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this dc olding compounds used by Microchip meet the UL94 V0 fli p://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp	0.0061 omply with EU Directive 20 via internal design controls emical substance is NOT an coument, there is no credib ammability standard for pla ls/plastics/ ped are made from polyving n in this form concerning su best of its knowledge and b it has been compiled base rade secrets and some info ight of these parts and the	TOTALS: g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol , supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce istics. You can access the UL iQTM family of databases /I chloride (PVC) plastic. "Window envelopes" used to h ubstances restricted by RoHS in Microchip Technology elief, as of the date listed in this form. Microchip Technology elief, as of the date listed in this form. Microchip Technology average weight of anticipated significant toxic metals co	100.000 HS Recast Di entration of the to obtain a te nold the pack Incorporated ology Incorpo & provided by semblers anc	6.100 rective) and w of Microchip i e chemical su est report at ing slip on the S semiconduc rated cannot raw material raw material	1,000,000 vith EU Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers.		Polymeric material (mg) Total GaAs (mg) Total	Trade secret Total Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5 Total	3 100.00 % of Total Weight 100 % of Total Weight 100.00	3.63 0.59
is semiconductor device and its homogenous materials or impliance with the above EU Directives has been verified or orporated's knowledge and belief as of the date of this do olding compounds used by Microchip meet the UL94 V0 fla p://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp d certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information their original packing materials is true and correct to the b completeness and accuracy of data in this form because pplier information is often protected from disclosure as tr ormation is provided only as estimates of the average wei clude trace levels of dopants, metals, and non-metal mater crochip Technology Incorporated does not provide any wi rranties provided by Microchip Technology Incorporated crochip's quotations, sales order acknowledgement, and i	0.0061 omply with EU Directive 20 via internal design controls emical substance is NOT an ocument, there is no credib ammability standard for pla (s/plastics/ ped are made from polyving h in this form concerning si th tas been compiled base rade secrets and some info ight of these parts and the rials contained within silico arranty, express or implied and its subsidiaries are con invoices.	g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol , supplier declarations, and /or analytical test data. Initentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce strics. You can access the UL iQTM family of databases /I chloride (PVC) plastic. "Window envelopes" used to h ubstances restricted by RoHS in Microchip Technology elief, as of the date listed in this form. Microchip Technology elief, as of the date listed in this form. Microchip Technology average weight of anticipated significant toxic metals co in devices (silicon IC) in the finished parts. , with respect to the information provided in this declara tataned in Microchip's standard terms and conditions of	100.000 HS Recast Di entration of the to obtain a te hold the pack Incorporated ology Incorpo semblers and omponents. 1 ation. The exc sale. These a	6.100 rective) and w of Microchip i e chemical su est report at ing slip on the 's semiconduc rated cannot raw material 'nese estimate clusive, limited are provided in	1,000,000 vith EU Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. es do not d product n		Polymeric material (mg) Total GaAs (mg) Total	Trade secret Total Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	3 100.00 % of Total Weight 100 % of Total Weight 100.00	0.59
is semiconductor device and its homogenous materials c impliance with the above EU Directives has been verified u chemical substance is absent from the list above, the ch corporated's knowledge and belief as of the date of this do olding compounds used by Microchip meet the UL94 V0 flip p://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp d certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information their original packing materials is true and correct to the to e completeness and accuracy of data in this form because pplier information is often protected from disclosure as tr ormation is provided only as estimates of the average we isude trace levels of dopants, metals, and non-metal mater crochip Technology Incorporated does not provide any w irranties provided by Microchip Technology Incorporated	0.0061 omply with EU Directive 20 via internal design controls emical substance is NOT an coument, there is no credib ammability standard for pla ls/plastics/ ped are made from polyving n in this form concerning si best of its knowledge and b it has been compiled base rade secrets and some info ight of these parts and the rials contained within silico arranty, express or implied and its subsidiaries are cor invoices. hanges to Material Content e users' reliance on the info	TOTALS: g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol , supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce astics. You can access the UL iQTM family of databases /I chloride (PVC) plastic. "Window envelopes" used to h ubstances restricted by RoHS in Microchip Technology elief, as of the date listed in this form. Microchip Technology elief, as of the date listed in Material Safety Data Sheets average weight of anticipated significant toxic metals co in devices (silicon IC) in the finished parts. , with respect to the information provided in this declare trained in Microchip's standard terms and conditions of Declarations and shall not be liable for any damages, d	100.000 HS Recast Di entration of the to obtain a te hold the pack incorporated ology Incorpor provided by semblers and components. T ation. The exc i sale. These lirect or indire	6.100 rective) and w of Microchip i e chemical su est report at ing slip on the set cannot raw material 'hese estimate :lusive, limited are provided in ect, consequei	1,000,000 vith EU Technology ubstance, if e outer box ctor devices guarantee suppliers. es do not d product n	0.04	Polymeric material (mg) Total GaAs (mg) Total Au	Trade secret Total Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	3 100.00 % of Total Weight 100 % of Total Weight 100.00 100.00	0.59

	се Туре: QX8E 08 (ц	ead) XSON 2x2x0.45mm (Q7)		nation Base pper Alloy (0			•	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part		8.14	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, fused	60676-86-0	Mold Compound	71.820	7.326	ppm 718,200		Silica, fused	60676-86-0	90.00	·
Epoxy Resin	Trade Secret	Mold Compound	3.870	0.395	38,703		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.870	0.395	38,703		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.239	0.024	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.000	1.020	100,003		u	Total	100.00	,
Nickel	7440-02-0	Lead Frame	0.267	0.027	2,667	1.07	(mg) Total	Lead Frame	% of Total Weight	10.5
Silicon	7440-21-3	Lead Frame	0.047	0.005	473		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.011	0.001	105		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.175	0.018	1,752		Silicon	7440-21-3	0.45	
Aq	7440-22-4	Die Attach	0.563	0.057	5,625		Magnesium	7439-95-4	0.10	
Epoxy resin	Trade secret	Die Attach	0.113	0.011	1,125		Silver	7440-22-4	1.67	
Aliphatic anhydride	Trade secret	Die Attach	0.038	0.004	375		•	Total	100.00	
2-Butoxyethyl acetate	112-07-2	Die Attach	0.019	0.002	188	0.08	(mg) Total	Die Attach	% of Total Weight	0.75
Polymeric material	Trade secret	Die Attach	0.019	0.002	188		Aq	7440-22-4	75.00	
GaAs	1303-00-0	Chip (Die)	7,500	0.765	75.000		Epoxy resin	Trade secret	15.00	
Gold	7440-57-5	Wire Bond	0.200	0.020	2.000		Aliphatic anhydride	Trade secret	5.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.128	12,500		2-Butoxyethyl acetate	112-07-2	2.50	
		TOTALS:		10.200	1,000,000		Polymeric material	Trade secret	3	
	0 0102	g Total Mass						Total	100.00	,
		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	S Recast Dire	ective) and wi	th EU	0.77	(mg) Total	Chip (Die)	% of Total Weight	7.5
ttive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl	I via internal design controls hemical substance is NOT a		to the best o	f Microchip T	echnology	0.77	(mg) Total GaAs	Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	7.5
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica	I via internal design controls hemical substance is NOT a locument, there is no credib ny regulatory scheme world- flammability standard for pla als/plastics/	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. astics. You can access the UL iQTM family of databases to	to the best o tration of the o obtain a tes	of Microchip T e chemical sul st report at	echnology bstance, if	0.77		1303-00-0	100	0.2
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica	I via internal design controls hemical substance is NOT a locument, there is no credib ny regulatory scheme world- flammability standard for pla als/plastics/	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide.	to the best o tration of the o obtain a tes	of Microchip T e chemical sul st report at	echnology bstance, if		GaAs	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. bochip Technology Incorporated believes the informatio eir original packing materials is true and correct to the ompleteness and accuracy of data in this form becaus lier information is often protected from disclosure as i	I via internal design controls hemical substance is NOT a document, there is no credib ny regulatory scheme world- flammability standard for pla als/plastics/ pped are made from polyvin on in this form concerning si best of its knowledge and b se it has been compiled base trade secrets and some info	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In leilef, as of the date listed in this form. Microchip Technology In d on the ranges provided in Material Safety Data Sheets p rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	to the best o ttration of the o obtain a tes ld the packin corporated's ogy Incorpor- rovided by ra- emblers and r	of Microchip T e chemical suit at report at g slip on the semiconduct ated cannot g aw material s	echnology bstance, if outer box tor devices juarantee uppliers. uppliers.		GaAs (mg) Total	1303-00-0 Total Wire Bond	100 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this di is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. bochip Technology Incorporated believes the informatio eir original packing materials is true and correct to the completeness and accuracy of data in this form becaus plier information is often protected from disclosure as i mation is provided only as estimates of the average wi de trace levels of dopants, metals, and non-metal mate bochip Technology Incorporated does not provide any v	I via internal design controls hemical substance is NOT a locument, there is no credib ny regulatory scheme world- flammability standard for pla als/plastics/ oped are made from polyvin best of its knowledge and b best of its knowledge and b to it has been compiled base trade secrets and some info eight of these parts and the erials contained within silicc warranty, express or implied d and its subsidiaries are co	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In leilef, as of the date listed in this form. Microchip Technology In d on the ranges provided in Material Safety Data Sheets p rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	to the best o tration of the o obtain a tes ld the packin corporated's ogy Incorpor- provided by ra emblers and r nponents. Th	of Microchip T e chemical sul at report at g slip on the asemiconduci ated cannot g aw material s raw material s rese estimates usive, limited	echnology bstance, if outer box tor devices juppliers. s do not product		GaAs (mg) Total	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the informatio eir original packing materials is true and correct to the ompleteness and accuracy of data in this form becaus blier information is often protected from disclosure as mation is provided only as estimates of the average wi de trace levels of dopants, metals, and non-metal maty paties provided by Microchip Technology Incorporated bochip Sequotations, sales order acknowledgement, and pochip disclaims any duty to notify users of updates or	I via internal design controls hemical substance is NOT a locument, there is no credib ny regulatory scheme world- flammability standard for pla als/plastics/ opped are made from polyvin best of its knowledge and be ei thas been compiled base trade secrets and some info eight of these parts and the erials contained within silicic warranty, express or implied d and its subsidiaries are con i invoices. changes to Material Contem he users' reliance on the infi	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In lelief, as of the date listed in this form. Microchip Technology In do n the ranges provided in Material Safety Data Sheets p rmation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con on devices (silicon IC) in the finished parts. , with respect to the information provided in this declarati	to the best o tration of the o obtain a tes ld the packin corporated's ogy incorpor- rovided by ri- emblers and ri- nponents. Th ion. The exclu- cale. These ar ect or indirec	of Microchip T e chemical sul at report at g slip on the semiconduct ated cannot g aw material s raw material s raw material s usive, limited re provided in ct, consequen	echnology bstance, if outer box tor devices uarantee uppliers. s do not product tial or	0.02	GaAs (mg) Total Gold	1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 100.00	0.2

Basic Substance CAS Number "U-centained in" "V-fold it mg/part pp 2.45 (mg) Total Mode Composed %, nt Total Weight 51.59 Blob, Basic 4000 FBB/sin 1138 550/1 Mode Composed 4,47.10 Siles, Lucal 6000 FBB/sin 51.59 52.56 51.59 52.56 51.59	ICROCHIP Semiconductor Devic	:е Туре: XX8E 08 (Lead) X2SON 2x2x0.35mm (X8)		nination Base Copper Alloy			•	nogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic substration Case / Mark Socie Mark Comparing Provide			"Contained In"	% I otal			0.00	(m) T-(-)	Mald Common d	of at Tatal Mainta	54.00
$ \frac{1}{10000} 1$	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	2.86	(mg) Total	Mola Compound	% of Total Weight	51.99
Phone Resin Task Secret Mold Compand 2.522 0.130 2.5216 Chick Black 1333.44 Mold Compand 0.157 0.000 1000 Note I 7440.220 Liss of France 0.137 0.057 10.307 0.057 10.307 0.057 10.307 0.057 10.300 0.000 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 0.017 10.301 10.301 0.017 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.301 10.30	Silica, fused	60676-86-0	Mold Compound	46.791	2.574	467,910		Silica, fused	60676-86-0	90.00	
Callon Black 1333-864 Mold Compound 0.156 0.000 1.560 Callon Black 1333-864 0.30 1002 7440,054 Laad Fram 0.011 0.027 0.307 0.027 10320 10020	Epoxy Resin	Trade Secret	Mold Compound		0.139	25,215		Epoxy Resin	Trade Secret	4.85	
$ \frac{Copper}{Nickel} = \frac{7440-50-6}{1400-20} = \frac{14ad Frame}{1400-20} = \frac{38,649}{1400-21} = \frac{2.726}{380,648} = \frac{140}{1400-10} = \frac{140}{1400-10} = \frac{1400-20}{1400-10} = 140$											
Niked 7440-02-0 Last Frame 1031 0.057 10.387 2.23 (mg) Total Lead Frame 40.35 Miscin 7440-22-1 Ladal Frame 0.131 0.001 1.285 (mg) Total Vert Total Weight 40.36 Miscin 7440-22-1 Load Frame 0.021 0.002 400 1.285 (mg) Total Lead Frame 40.36 2.24 (mg) Total Vert Total Weight 40.36 2.24 (mg) Total Lead Frame 40.36 2.24 (mg) Total Lead Frame 40.36 2.24 (mg) Total Vert Total Weight 40.36 2.25 (mg) Total Vert Total Weight 40.36 2.36 (mg) Total Vert Total Weight 40.36 2.36 (mg) Total Vert Total Weight 2.36 (mg) Total Vert Total Weight 40.36 2.36 (mg) Total Vert Total Weight 40.36 2.36 (mg) Total Vert Total Weight 2.36 (mg) Total Vert Total Weight 2.36 (mg) Total Vert Total Weight 2.36 (mg) Total Vert Total Wei								Carbon Black			
Silon 7440/210 Lead Frame 0.183 0.010 1.286 Magresium 7430/324 Lead Frame 0.011 0.020 400 Strue 7420/224 Lead Frame 0.027 6.031 6.030 7460/233 0.646 Strue 7420/224 Lead Frame 0.077 0.030 6.733 5.86m 7440/233 0.646 Strue 710 1700 1700 0.072 0.030 6.733 5.86m 7440/224 1.67 Strue 710 7400/21 1700									Total	100.00	
Magnetism 74393-95-4 Lead Finne 0.047 0.032 406 Sive 746224 Lead Finne 0.047 0.032 407 Sive 746224 Distant 1087 0.034 1082 Galum arrende (GA) 1303000 CPU (Pol) 2.330 0.133 2.300 133 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 746224 0.041 0.041 746224 0.041 0.041 746224 0.041 0.041 746224 0.041 0.041 746224 0.041 0.041 746224 0.041 0.041 0.041 0.041 0.041 0.030 0.021 0.041 0.030 0.021 0.041 0.030 0.021 0.041 0.041 0.030<	Nickel		Lead Frame	1.031		10,307	2.23	(mg) Total	Lead Frame	% of Total Weight	40.58
Silver 7440-224 Lead Frame 0.637											
Silver 7440-22-4 De Attach 1.888 0.104 18.80 0.104 18.80 0.104 18.80 0.104 18.80 0.104 18.80 0.104 18.80 0.104 18.80 0.104 18.80 0.105 18.80 0.106 % of Total Weight 2.36 0.13 (mg) Total Main 0.10 190.00 190.00 190.00 190.00 190.00 190.00 190.00 190.00											
Epony Resin Trade secret Die Atlach 0.472 0.028 4.720 Galium arsendie (GaA) 103000 Chp (Die) 2.360 0.130 2.360 0.130 2.360 0.130 2.360 0.130 2.360 0.130 2.360 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.130 7.000 0.010 1.000.000 Total 0.000 0.000 7.0000 7.000											
Gallum assentide (Gales) 1302-00-0 Chip (Die) 2.360 0.130 22.600 1000 Tin 7440-31-5 Wing nearmal keep (Gales) 0.055 g Vol 104 (Gales) 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.0000 0.000000 0.000000 0.000000 0.0000000000000000											
Doped Cold 7440-57.5 Wrie Bord Or 200 0.040 7.200 0.13 Ung Tetal Die Attach % of Tetal Weight 2.36 Tri 7440-515 Puic group Mars TOTALS: 100.000 5.500 1,009.00 5.500 1,009.00 Eposy Resin Tridbistic 80.00 SZEC [End-of-Life Vehicles [ELV] Prioritives 0.0025 g Total Mass Tridbistic 80.00 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,009.000 5.500 1,000.000 5.500 1,000.000 5.500 1,000.000 5.500 1,000.000 5.500 1,000.000 5.500 1,000.000 5.500 1,000.000 5.500 1,000.000 5.500 1,000.000 5.500 1,000.000 5.500 1				-				Silver			
Tin 7440-315 Putting on external lusing (pm) - Matter Tri / annealed at 100°C for 1.00 1.990 1.01.09 1.900 1.01.09 1.900 1.01.09 1.900 1.01.09 1.900 1.000 1.900	Gallium arsenide (GaAs)								Total	100.00	
TOTALS: 100.000 5.500 1,000,000 EpopyRean Totals 20:00 Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 0.13 (mg) Total Chip (Die) % of Total Weight 2.36 Dirace with the above EU Directives has been everified via internal design controls, supplier declarations, and /or analytical test data. 0.13 (mg) Total Chip (Die) % of Total Weight 2.36 Dirace with the above EU Directives is no crotible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, to bee of Microchip Technology 0.41 (mg) Total Chip (Die) % of Total Weight 2.36 Uncomploade figures with the specific product is shipped are made from polyvinyl choride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in "reels" in which the specific product is shipped are made from polyvinyl choride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in "reels" may be made from PVC plastic. 0.04 (mg) Total Doped Gold 7440:57:5 100.00 Ubjectenses and accuracy of data in his form concerning substances restricted by ROHS in Microchip Technology incorporated is semiconductor devices in michine his form concerning substance services and some information in this form concerning substance services and some information provided by subservices and some information may	Doped Gold		Wire Bond				0.13	(mg) Total	Die Attach	% of Total Weight	2.36
Dubble Start Total Chip Chip Chip Chip Chip Chip Chip Chip	Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour					Silver	7440-22-4	80.00	
semiconductor device and its homogenous materials comply with EU Directive 2020/SEC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 0.13 (mg) Total Chip (Die) % of Total Weight 2.36 Directive 2020/SEC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 0.13 (mg) Total Chip (Die) % of Total Weight 2.36 Callium assenide 1 above, the chemical substance is NDT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology protective for whole and the due of the iso councel, there is no credible cason to believe that the unavoidable impurity concentration of the chemical substance, if any, to below the threshold of regulatory concern for any regulatory scheme world-wide. Ing compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <i>Nucconfobale</i> displays discustracies/intenside/signatus			TOTALS:	100.000	5.500	1,000,000		Epoxy Resin	Trade secret	20.00	
hemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology porated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any full complobale ng/pages/offerings/industries/chemical/substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology porated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any full complobale ng/pages/offerings/industries/chemical/substance/ in "reels" may be made from PVC plastic. Cochip Technology Incorporated believes the Information in this form concerning substances restricted by PAOS in Microchip Technology Incorporated's semiconductor devices in original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the original packing materials is true and correct to the best of its knowledge and belief, as of the date disinficant toxic metals components. These estimates do no include trace levels of mits, metals, and non-metal materials contained within sillicon devices (ellicon IC) in the finished pars. Cochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product maties provided by Microchip standard terms and conditions of sale. These are provided in Microchip's ations, sales order acknowledgement, and invoices.		comply with EO Directive 2	02/33/EC (KOHS Directive), EO Directive 2011/03/EO (KOHS								
Internetia substance is absent from the list above, the chemical substance is NOT an intentional ingrediate is model. 0.04 (mg) Total Wire Bond 0.72 Uncomplobaleng/pages/offerings/industrise/schemical/splastics/ 0.04 (mg) Total Wire Bond % of Total Weight 0.72 Uncomplobaleng/pages/offerings/industrise/statics/ 0.04 (mg) Total Wire Bond % of Total Weight 0.72 Uncomplobaleng/pages/offerings/industrise/statics/ 0.04 (mg) Total Wire Bond % of Total Weight 0.72 Uncomplobaleng/pages/offerings/industrise/statics/ 0.04 (mg) Total Wire Bond % of Total Weight 0.72 Uncomplobaleng/pages/offerings/industrise/states/ 0.04 (mg) Total Wire Bond % of Total Weight 0.72 Uncomplobaleng/pages/offerings/industrise/states/ 0.04 (mg) Total Wire Bond % of Total Weight 0.72 Uncomplobaleng/pages/offerings/industrins/states/states/industries/pages/offerings/industrise/	53/EC (End-of-Life Vehicles (ELV) Directive).					I LO Directive	0.13	(mg) Total	Chip (Die)	% of Total Weight	2.36
protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in "reels" may be made from PVC plastic. Dopped Gold 7440-57-5 100.00 Total 100.00 Tota	pliance with the above EU Directives has been verified	•					0.13		1303-00-0	100	2.36
Decking materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's semiconductor devices in pleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and an on-metal materials contained within silicon devices (silicon IC) in the finished parts. opchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product antices provided in Microchip's standard terms and conditions of sale. These are provided in Microchip's ations, sales order acknowledgement, and invoices. 0.11 (mg) Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour obchip disclaims any duty to notify users of updates or changes to Material Content Declarations in Material Content Declarations (MCD) or independent third party test reports (SGS) or of Certificate of Compliance for semiconductor products. Tin Tatal 100.00	pliance with the above EU Directives has been verified nemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this of t below the threshold of regulatory concern for any re- ing compounds used by Microchip meet the UL94 V0 f	hemical substance is NOT a locument, there is no credil gulatory scheme world-wid lammability standard for pl	n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concent a.	to the best o tration of the	f Microchip Te chemical sub	echnology		Gallium arsenide	1303-00-0 Total	100 100.00	
Occupit prechnology incorporated addes into provide any warranty, express or implied, with respect to the information provide an inside catation. The exclusive, initiate product and inside catation. The exclusive,	pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this of t below the threshold of regulatory concern for any reg ing compounds used by Microchip meet the UL94 V0 f /ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	hemical substance is NOT a locument, there is no credil gulatory scheme world-wid lammability standard for pl als/plastics/	n intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concent a. astics. You can access the UL iQTM family of databases to	to the best o tration of the obtain a tes	f Microchip Te chemical sub t report at	echnology Istance, if any,		Gallium arsenide	1303-00-0 Total Wire Bond	100 100.00 % of Total Weight	
rwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of Certificate of Compliance for semiconductor products.	bilance with the above EU Directives has been verified nemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this of the below the threshold of regulatory concern for any reg- ing compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. Suchip Technology Incorporated believes the informatic original packing materials is true and correct to the be leteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec	hemical substance is NOT a locument, there is no credil gulatory scheme world-wid lammability standard for pl als/plastics/ opped are made from polyvir on in this form concerning s sts of its knowledge and bel has been compiled based of rets and some information aarts and the average weigl	In intentional ingredient in the semiconductor device and, to be reason to believe that the unavoidable impurity concent astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol substances restricted by RoHS in Microchip Technology Inc ief, as of the date listed in this form. Microchip Technology in any not have been provided by subcontract assemblers ar to of anticipated significant toxic metals components. These	to the best o tration of the obtain a tes d the packin corporated's / Incorporate ided by raw i nd raw matei	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot guan naterial suppli	echnology stance, if any, outer box and or devices in rantee the iers. Supplier Information is		Gallium arsenide	1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100.00	
	bilance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this of below the threshold of regulatory concern for any reg- ing compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. which prechnology Incorporated believes the informatic original packing materials is true and correct to the be leteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec ded only as estimates of the average weight of these ints, metals, and non-metal materials contained within whip Technology Incorporated does not provide any v unities provided by Microchip Technology Incorporated	hemical substance is NOT a locument, there is no credit yulatory scheme world-wid lammability standard for pl als/plastics/ opped are made from polyvir on in this form concerning s sts of its knowledge and bel has been compiled based o has been compiled based o rets and some information parts and the average weigt silicon devices (silicon IC) varranty, express or implied	In intentional ingredient in the semiconductor device and, to be reason to believe that the unavoidable impurity concent astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hole substances restricted by RoHS in Microchip Technology Indier, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets provi- may not have been provided by subcontract assemblers ar at of anticipated significant toxic metals components. Thes in the finished parts.	to the best o tration of the obtain a tes d the packin corporated's / Incorporate ded by raw i draw mate se estimates on. The excli	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot guar naterial suppliers. do not include usive, limited p	echnology stance, if any, outer box and or devices in rantee the fers. Supplier Information is a trace levels of product	0.04	Gallium arsenide (mg) Total Doped Gold	1303-00-0 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100.00 100.00	0.72
	bliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this of the below the threshold of regulatory concern for any re- ing compounds used by Microchip meet the UL94 V0 f /ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. Suchip Technology Incorporated believes the informatic original packing materials is true and correct to the be beleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec ded only as estimates of the average weight of these j ntts, metals, and non-metal materials contained within schip Technology Incorporated does not provide any v enties provided by Microchip Technology Incorpora- tations, sales order acknowledgement, and invoices.	hemical substance is NOT a locument, there is no credil yulatory scheme world-wid lammability standard for pl als/plastics/ opped are made from polyvir on in this form concerning s sto of its knowledge and be has been compiled based of rets and some information parts and the average weigh silicon devices (silicon IC) varranty, express or implier I and its subsidiaries are con- changes to Material Conter- he users' reliance on the ini-	In intentional ingredient in the semiconductor device and, to be reason to believe that the unavoidable impurity concent a. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hol ubstances restricted by RoHS in Microchip Technology Inc ief, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets provi may not have been provided by subcontract assemblers ar to of anticipated significant toxic metals components. Thes in the finished parts.	to the best o rration of the obtain a tes d the packin corporated's / Incorporate ded by raw ind raw mateus e estimates on. The excli ale. These ar esct or indirec	f Microchip Te chemical sub t report at g slip on the o semiconduct. da cannot guar naterial suppli ial suppliers. do not include usive, limited p e provided in l	echnology istance, if any, outer box and or devices in rantee the iers. Supplier Information is otrace levels of product Microchip's ial or	0.04	Gallium arsenide (mg) Total Doped Gold (mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 100.00 % of Total Weight 100.00 100.00	0.72

Ліскоснір				ation Base A oper Alloy (Co	-			ogeneous Materials: .g. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: TL 36 (Lear									e4
		"Contained In"	% Total			117.71	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		,			
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	100.049	678,300		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	6.943	10.240	69,426		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin Carbon Black	Trade Secret 1333-86-4	Mold Compound Mold Compound	4.788 0.239	7.062 0.353	47,880 2,394		Phenolic Resin	Trade Secret 1333-86-4	6.00 0.30	
Carbon Black	7440-50-8	Lead Frame	10.239	15.069	2,394		Carbon Black	1333-86-4 Total	0.30	
Iron	7439-89-6	Lead Frame	0.242	0.356	2,415	15.49	(Lead Frame	% of Total Weight	10.5
	7439-89-0		0.0242	0.039	2,415	15.49	(mg) Total			10.5
Phosphorous Zinc (Metal)	7440-44-0	Lead Frame Lead Frame	0.026	0.039	263		Copper	7440-50-8 7439-89-6	97.30	
Silver (Ag)	7440-44-0	Die Attach	0.016	0.023	5,888		Iron Phosphorous	7439-89-6 7723-14-0	2.30 0.25	
Proprietary Resin	Trade Secret	Die Attach	0.139	0.866	5,000 1,388		Zinc (Metal)	7440-44-0	0.25	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.033	225		Zinc (Wetai)	Total	100.00	1
Silicon	7440-21-3	Chip (Die)	7.500	11.063	75.000	4.44	(0.75
		- 1 (-)				1.11	(mg) Total	Die Attach	% of Total Weight	0.75
Gold	7440-57-5	Wire Bond	0.200	0.295	2,000		Silver (Ag)	7440-22-4	79	
Nickel Palladium	7440-02-0 7440-05-3	Plating on external leads (pins) / annealed at 150°C for 1 hour Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125 0.063	1.659	11,250 625	Descriptor	Proprietary Resin ry Curing agent & Hardener	Trade Secret Trade Secret	19	
Gold	7440-05-3	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.092	625	Proprieta	ry Curing agent & Hardener	Trade Secret	3 100.00	
Gold	7440-37-5	Totals:	100.000	147.500	1.000.000	11.06	Total (mg)	Chip (Die)	% of Total Weight	7.5
			100.000	147.500	1,000,000	11.00				7.5
		g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol					Doped Silicon	7440-21-3 Total	100 100.00	
		ols, supplier declarations, and /or analytical test data.				0.30	(mg) Total	Wire Bond	% of Total Weight	0.2
orporated's knowledge and belief as of the date of this do	ocument, there is no cred	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conce				0.30	(mg) Total Doped Gold	Wire Bond 7440-57-5	% of Total Weight	0.2
orporated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any	ocument, there is no cred y regulatory scheme worl	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conce	ntration of the	chemical sub		0.30				0.2
orporated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any	ocument, there is no cred y regulatory scheme worl ammability standard for p	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conce d-wide.	ntration of the	chemical sub		0.30		7440-57-5 Total	100	0.2
orporated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fit o://ul.com/global/eng/pages/offerings/industries/chemical	ocument, there is no cred y regulatory scheme worl ammability standard for p ls/plastics/	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conce d-wide.	ntration of the	chemical sub	stance, if	0.30		7440-57-5	100	0.2
orporated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any iding compounds used by Microchip meet the UL94 V0 fit :://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bes npleteness and accuracy of data in this form because it h rmation is often protected from disclosure as trade secre	ocument, there is no cred y regulatory scheme worl ammability standard for p ls/plastics/ ped are made from polyvi n in this form concerning st of its knowledge and b has been compiled based ets and some informatior parts and the average w	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conce d-wide. Dastics. You can access the UL iQTM family of databases inyl chloride (PVC) plastic. "Window envelopes" used to h substances restricted by RoHS in Microchip Technology I elief, as of the date listed in this form. Microchip Technolo on the ranges provided in Material Safety Data Sheets pro may not have been provided by subcontract assemblers eight of anticipated significant toxic metals components."	ntration of the co obtain a test old the packing ncorporated's gy Incorporate gy lncorporate nd raw mater	chemical sub: report at g slip on the o semiconducto d cannot guar naterial suppli- ial suppliers. I	stance, if uter box and or devices in antee the ers. Supplier nformation		Doped Gold	7440-57-5 Total Plating on external leads (pins) / annealed at 150°C	100	
orporated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for any iding compounds used by Microchip meet the UL94 V0 fit s://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the bes npleteness and accuracy of data in this form because it h irmation is often protected from disclosure as trade secr rovided only as estimates of the average weight of these els of dopants, metals, and non-metal materials contained rochip Technology Incorporated does not provide any we	ocument, there is no cred y regulatory scheme worl ammability standard for p Is/plastics/ ped are made from polyvi n in this form concerning st of its knowledge and b has been compiled based ets and some information parts and the average w d within silicon devices (: arranty, express or implie	an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conce d-wide. Dastics. You can access the UL iQTM family of databases inyl chloride (PVC) plastic. "Window envelopes" used to h substances restricted by RoHS in Microchip Technology I elief, as of the date listed in this form. Microchip Technolo on the ranges provided in Material Safety Data Sheets pro may not have been provided by subcontract assemblers eight of anticipated significant toxic metals components."	ntration of the obtain a test old the packing ncorporated's gy Incorporate vided by raw n and raw mater These estimate tion. The exclu	chemical sub report at g slip on the o semiconducto d cannot guar naterial suppli ial suppliers. I s do not inclue sitove, limited p	stance, if uter box and or devices in antee the ers. Supplier nformation de trace product		Doped Gold (mg) Total	7440-57-5 Total Plating on external leads (pins) / annealed at 150°C for 1 hour	100 100.00 % of Total Weight	

rochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in roriginal packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the pipleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier rmation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information rovided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace is of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. ronchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's	AICROCHIP Semiconductor Device	Туре: TL 44 (Lead	i) VTLA 6x6x0.9mm (6S)		ation Base A oper Alloy (C	-		•	nogeneous Materials: e.g. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e4
Site, where of the length 6907/940 Mod Compound 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 67/30 120/306 <th></th> <th>CAS Number</th> <th></th> <th></th> <th>un alta e at</th> <th></th> <th>141.65</th> <th>(mg) Total</th> <th>Mold Compound</th> <th>% ot Total Weight</th> <th>79.8</th>		CAS Number			un alta e at		141.65	(mg) Total	Mold Compound	% ot Total Weight	79.8
Epopy Rein Trade Scoret Mod Compound 6.83 12.33 60.426 Proved. Rein Trade Scoret 6.70 100.00 7.63 100.00			•	· J ·				Cilian vitan ava (an furnal)	0.0070.00.0	-	
Photoch Roam Trade Scoret Model Compound 4788 8.409 4780 Model Compound Trade Scoret Score 0 1333 844 Mod Compound 0.198 0.193<											
Carbon Black 1333 884 Mod Compound 0.237 0.432 234 Corport 7,440 0.60 Lad Finam 0.017 161 14 101 000 162 14 102 100											
Copper 7448-864 Laad Finne 0.227 16.134 0.0216 1000 Pheptroxa 7723-16.0 Laad Finne 0.026 0.027 25.3 97.30 97.30 Pheptroxa 7723-16.0 Laad Finne 0.026 0.027 25.3 97.30 97.30 String (Ag) 7440-724 Die Allahn 0.026 0.027 25.8 20.027 743.05.23 97.30 Propretury Reen Trade Scret Die Allahn 0.026 0.047 25.8 20.027 743.05.23 97.30 Propretury Reen Trade Scret Die Allahn 0.026 0.040 7460.053 1000 0.030 2000 1000 7460.053 1000											
Iron 7439-96-9 Lad Finane 0.242 0.427 0.428 0.042 0.243 0.029 7430-14 Load Finane 0.016 0.017<								odibon bidok			
Propertors 772140 Lead Frame 0.026 0.047 283 Copper 7440450.8 97.30 Burn (Ma) 1740220.0 Dia Atlan 0.028 0.047 283 1.046 5.086 1.046 5.086 1.046 5.086 1.046 5.086 1.046 5.086 1.046 5.086 1.046 5.086 1.046 5.086 1.046 5.086 1.046 0.02 1.046 5.086 1.046 0.02 1.046 0.02 1.046 0.02 1.046 0.02 1.046 0.02 1.046 0.02 1.046 1.02 1.040 1.02 1.040 1.02 1.040 1.02 1.040 1.02 1.040 1.02 1.040 1.02 1.040 1.02 1.040 1.02 1.040							18 64	(mg) Total			10.5
$\frac{2 \text{ loc}(\text{Mail})}{\text{Ster}(A_0)} + \frac{746244}{746254} + \frac{10 \text{ A loc} A \text{ loc} A}{1062} + \frac{1068}{1068} $							10101				1010
Strep Prophetary Control Productory Control </td <td></td>											
Image Trade Trade <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>											
Proprietary Curry gigant & Hardnern Trade Secret Die Attach 0.023 0.040 225 Under the control of the contr											
Silon 740213 One (00) 7500 13.31 75000 13.31 (m) Total Obset 0.75 Nickel 744020-0 Plance on consult leads (pn) annealed at 150°C to 1 box 11.25 1.997 11.250 Proprint Start Add Start 100.00 740.02.0 100.00 10								Eine (motal)			
God 7440-67-5 Wire Bond 0.2020 0.358 2.000 Sile (r/g) 2440-82-4 775 Palladum 7440-65-5 Palagion external leads (pind) / annealed at 150°C for 1 hour 0.063 0.111 625 Proprietary Currg garet & Historieur 10000 0.001 7440-65-5 Palagion external leads (pind) / annealed at 150°C for 1 hour 0.063 0.111 625 Proprietary Currg garet & Historieur Currg						-	1 33	(mg) Total			0.75
Noted 7440-020 Plaining on external leads (pins) 2 innested at 150°C of 1 hour 1.225 1.937 11.200 Gold 7440-57-5 Plaining on external leads (pins) 2 innested at 150°C of 1 hour 0.063 0.111 625 Gold 7440-57-5 Plaining on external leads (pins) 2 innested at 150°C of 1 hour 0.063 0.111 625 Other State Total 1000.000 177.500 1000.000 177.500 1000.000 1000							1.55				0.75
Plandum 7440-05-3 Planding on external lasks (pm) Janneed at 150°C or 1 hour 0.083 0.111 625 Old 7440-75-5 Planding on external lasks (pm) Janneed at 150°C or 1 hour 0.083 0.111 625 TOTALS: 1000.000 177.50 1.000.000 177.50 1.000.00 13.31 Total (mg) Chip (pb) % of Total Weight 7.5 Semiconductor device and its homogenous materials comply with EU Directive 2002/55/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 0.000 13.31 Total (mg) Chip (mb) % of Total Weight 0.2 Jong compounds used by Microchip meet the UD Vortex to an ochibe resonance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology propriet device of the date of this come. Total to an ochibe resonance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology for portated's konvideg and belief as of the date of this on ochibe resonance is NOT an intentional ingredient in the semiconductor device and is a test report at Microchip Technology for portated weight Value Meight 0.2 Jong compounds used by Microchip meet the ULS4 Vo flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at Microchip Technology incorporated is another plastic material substances is reporided in Microchip Sechofic poduct is shipped are madef											
Gold 7440-07-5 Planing on external leads (pmin) / ammealed at 150°C for 1 hour 0.033 0.111 0203 0.111 02							Proprioto				
Output TOTALS 100.000 177.500 1,000,000 13.31 Total may Chip (Dip) % of Total Weight 7.5 semiconductor device and its homogenous materials comply with EU Directive 2023/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Doped Silicon 7440-21-3 100 plance with the above EU Directive, has been verified via internal design controls, supplier declarations, and /or analytical test data. 0.36 (mg) Total Wire Bond % of Total Weight 0.2 plance with the above EU Directive, has been verified via internal design controls, supplier declarations, and /or analytical test data. 0.36 (mg) Total Wire Bond % of Total Weight 0.2 is no blow the threshold of regulatory concent for an intentional ingredient in the semiconductor device and, to the best of Microchip Technology 0.36 (mg) Total Wire Bond % of Total Weight 0.2 is no blow the threshold of regulatory concent for any regulatory scheme work-wide. 100 100.00 100.00 100.00 100.00 is no blow the threshold of regulatory concent for any regulatory scheme work-wide. 100 2.22 (mg) Total Plating on external leads (gins) annealed at 190°C % of Total Weight 1.25 rotela regular regular regular					-		Fiophetai	y curing agent & mardener			
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semiconductor devices and its homogenous materials comply with EU Directive 2020/35/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2020/35/EC (RoH-of-Life Vahicles (ELV) Directive). International substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology prorated Sknowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if is no blow the threshold of regulatory concern for any regulatory scheme verified Value (PCC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in "reels" may be made from PVC plastic. Total To				100.000	177.500	1,000,000	13.31				7.5
Semiconductor devices in the interval complex index is complex index in the 2D interview 2002/SEC (Ficher John Recussion Directive) and with ED plance with the above. EU Directives has been verified via internal design controls, supplier declarations, and <i>/or</i> analytical test data. Pointed Substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology protected from field of regulatory concern for any regulatory scheme world-wide. Total <u>Uncomplexed inspace of the data </u>		0.1775	g Total Mass					Doped Silicon			
is not below the threshold of regulatory concern for any regulatory scheme world-wide. Ing compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at //u.com/global/egs/industries/chemicals/plastics/ rorotective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and in "reels" may be made from PVC plastic. cohip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated's semiconductor devices in original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the provided by Macrochip Technology Incorporated believes the information any not have been provided by subcontract assemblers and rase marage weight of anticipated significant toxic metals components. These estimates do not include trace s of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. cohip Technology Incorporated does not provide and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's s of dopants, metals, and non-metal material scontained within silicon devices. Cohip Technology Incorporated does not provide and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's s of dopants, metals, and non-metal materials contained within silicon devices. Cohip Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's s of dopants, metals and non-metal materials contained within silicon devices. Cohip Microchip Technology Incorporated one the information provided i		ia internal design contro		HS Recast Dire	ctive) and with	1 EU	0.36	(mg) Total			0.2
and components used by which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and an "reels" may be made from PVC plastic. 2.22 (mg) Total Plating on external leads (pins) / annealed at 150°C for 1 hour % of Total Weight 1.25 or origin packing sing dual head from PVC plastic. Internal content to be set of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated semiconductor devices in or original packing materials is true and correct to the bas been compiled based on the ranges provided in Material Safety Data Safet	npliance with the above EU Directives has been verified vi chemical substance is absent from the list above, the che	mical substance is NOT	uls, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device an	d, to the best of	f Microchip Te	chnology	0.36		Wire Bond	% of Total Weight	0.2
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ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's tations, sales order acknowledgement, and invoices. Trochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or provise, suffred by users of third party test reports (SGS) or Gold T440-05-3 5.00 Gold T440-05-3 5.00	npliance with the above EU Directives has been verified vi chemical substance is absent from the list above, the che opprated's knowledge and belief as of the date of this doc , is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 flar ://ul.com/global/eng/pages/offerings/industries/chemicals	mical substance is NOT cument, there is no cred regulatory scheme worl mmability standard for p /plastics/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device an ible reason to believe that the unavoidable impurity conc d-wide. plastics. You can access the UL iQTM family of databases	d, to the best of entration of the to obtain a test	f Microchip Te chemical sub t report at	chnology stance, if		Doped Gold	Wire Bond 7440-57-5 Total Plating on external leads (pins)/ annealed at 150°C	% of Total Weight 100 100.00	
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Total 100.00	mpliance with the above EU Directives has been verified vi chemical substance is absent from the list above, the che proporated's knowledge and belief as of the date of this doo is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 flat or//ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipper ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information ir original packing materials is true and correct to the best pleteness and accuracy of data in this form because it ha rowided only as estimates of the average weight of these p als of dopants, metals, and non-metal materials contained rochip Technology Incorporated does not provide any wai	mical substance is NOT sument, there is no cred regulatory scheme worl mmability standard for p /plastics/ ed are made from polyv in this form concerning of its knowledge and b is been compiled based ts and some information parts and the average w within silicon devices (rranty, express or implied	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device an ible reason to believe that the unavoidable impurity conc d-wide. Dastics. You can access the UL iQTM family of databases inyl chloride (PVC) plastic. "Window envelopes" used to I substances restricted by RoHS in Microchip Technology elief, as of the date listed in this form. Microchip Technology and the table is the interial Safety Data Sheets pro- imay not have been provided by subcontract assemblers eight of anticipated significant toxic metals components. silicon IC) in the finished parts.	d, to the best of entration of the to obtain a test nold the packing Incorporated's gy Incorporate ovided by raw n a and raw mater These estimate ation. The exclu	f Microchip Te chemical sub report at g slip on the o semiconducto d cannot guar naterial suppli ial suppliers. I is do not inclu usive, limited p	chnology stance, if uter box and or devices in antee the ers. Supplier nformation de trace oroduct		(mg) Total	Wire Bond 7440-57-5 Total Plating on external leads (pins) / annealed at 150°C for 1 hour 7440-02-0	% of Total Weight 100 100.00 % of Total Weight 90.00	
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Basic SubstanceCAS NumberSub-ComponentWeightmg/m111.55(mg) TotalMol Compout5.4.5(mg) TotalMol CompoutS.5.5(mg) TotalMol CompoutS.5.5(mg) TotalMol CompoutS.5.5(mg) TotalMol CompoutS.5.5(mg) TotalMol CompoundS.5.5(mg) TotalMol CompoundS.5.5Mol CompoundS.5.5Mol CompoundS.5.5Mol CompoundS.5.5Mol CompoundS.5.5Mol CompoundMol Compound<	Semiconductor Device	Type: TL 124 (Lei									e4
Siles, thread of factor BODY Biol Molit Compound 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 67:800 10:30 <th< th=""><th>Basic Substance</th><th>CAS Number</th><th></th><th></th><th>mg/part</th><th>ppm</th><th>141.65</th><th>(mg) Total</th><th>Mold Compound</th><th>% ot Total Weight</th><th>79.8</th></th<>	Basic Substance	CAS Number			mg/part	ppm	141.65	(mg) Total	Mold Compound	% ot Total Weight	79.8
$ \frac{1}{10000000000000000000000000000000000$			•	•				Silica vitreous (or fused)	60676-86-0	85.00	
Phenole Regin Trade Sector Mode Compound 47.88 8.49 47.88 0.425 17.88 0.00 Calcon Rack 1323.86 1.621 Canpone 1223.86 0.425											
Copy m 7443 96.6 Land Finne 0.217 19.134 100.100 Total Total <thtotal< th=""> Total<td></td><td></td><td>Mold Compound</td><td></td><td>8.499</td><td></td><td></td><td></td><td></td><td>6.00</td><td></td></thtotal<>			Mold Compound		8.499					6.00	
Inin //33/93/6 Lasd Frame 0.242 0.432 2.415 18.44 (mg) Teal Lead Frame 0.016 Propertory 7723-16-0 Lasd Frame 0.016 0.028 168 168 168 1723-16-0 168 97.30 Propertory Kein 7723-16-0 Lasd Frame 0.016 0.028 168 170 1723-16-0 2.30 1723-16-0 170 1723-16-0 170 1723-16-0 170 1723-16-0 170 1723-16-0 1760-0	Carbon Black	1333-86-4	Mold Compound	0.239	0.425	2,394		Carbon Black	1333-86-4	0.30	
$\frac{Properties (M_1)}{2 N cr_{1}(M_2)} = \frac{772-14.0}{1400/2.4} = \frac{1.0 and Frame}{1.0 0.06} = 0.047 + 295 \\ \frac{200}{200} = \frac{200}{100} = \frac{740.05.4}{100} = \frac{97.30}{1400/2.4} = \frac{97.30}{100} $	Copper	7440-50-8	Lead Frame	10.217	18.134	102,165			Total	100.00	,
Zinc (Mai) 7440-44 Lead Farme 0.016 0.028 158 Silver (A) 7440-24 Die Alach 0.588 1048 588 Proprieting Kein 1740-557 Die Alach 0.588 1048 588 Proprieting Kein 1740-557 Die Alach 0.588 1048 7440-557 108.00 Gold 7440-557 Wite (N) 7400-573 Wite (N) 7400-573 108.00 103.00 100.00 100.00 100.00 100.00 100.00 <td>Iron</td> <td>7439-89-6</td> <td>Lead Frame</td> <td>0.242</td> <td>0.429</td> <td>2,415</td> <td>18.64</td> <td>(mg) Total</td> <td>Lead Frame</td> <td>% of Total Weight</td> <td>10.5</td>	Iron	7439-89-6	Lead Frame	0.242	0.429	2,415	18.64	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver (x_0)7440 224Die Attach0.5881.6455.888Proprietary, Curring quert, & HardnerrTrads. ScrettDie Attach0.1380.2361.33(mg) Total0.025Control7440 57.5Um Barting0.0220.0402261.33(mg) TotalTotal7400 000Nickel7440 57.5Um Barting0.0250.0001.32(mg) Total0.0252.000Relation7440 57.5Um Barting0.0250.0110.0252.0001.33(mg) Total7400 000Gold7440 57.5Pattag on adveral leads (prin) anneaded at 190°C tor how 0.0650.01110.0550.01110.0550.01110.000Gold7440 57.5Pattag on adveral leads (prin) anneaded at 190°C tor how 0.0650.01110.0551.33Total (mg) Chip Clap 2.0001.33Total Semionation of the homospenus materials comply with EU Directive 2007/SEC (Gold Of how 0.0650.01110.551.33Total (mg) Chip Clap 2.0001.331.3000emionation of the homospenus materials comply with EU Directive 2007/SEC (Gold Of how 0.0650.01110.551.33Total (mg) Chip Clap 2.0001.331.3000metrical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the besit of Microchip Technology0.0630.1110.550.341.34Total 2.000georder wite Wite Wite Wite Wite Wite Wite Wite W	Phosphorous	7723-14-0	Lead Frame	0.026	0.047	263		Copper	7440-50-8	97.30	
Employing Resin Trade Societ Die Attlich 0.139 0.246 1.38 Die Attlich 0.023 0.040 225 Silicon 7440 213 Chip (0e) 7.000 1.33 76.000 1.33 76.000 1.33 mg beta the first of 00.000 7440 213 Vice Total Weight 76.000 1.33 mg beta the first of 00.000 7440 213 Vice Total Weight 76.000 1.33 mg beta the first of 00.000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.0000 76.00000 76.00000 76.00000 76.00000 76.0000								Iron	7439-89-6		
Proprietary Curry Signet & Herdener Trade Secret Die Attach 0.023 0.040 225 Total Trade 3.0500 1.33 (pg) Total Die Attach 4.00 for Construction of the Construction of											
Silion 7440-21-3 Chip (bip) 7,000 13.3 75,000 1.33 Ung Total Die Attach % of Total Weight Rickel 7440-25-5 Wire Bond 0.2355 2.000 SS5 2.000 SS5 7.000 1.33 (mg) Total Die Attach % of Total Weight Palladium 7440-25-75 Pating on external leads (pin) / annealed at 150°C for 1 hour 0.035 0.111 625 Proprietary Camp agent & Hardener Virals Secret 3 Gold 7440-25-75 Pating on external leads (pin) / annealed at 150°C for 1 hour 0.063 0.111 625 Proprietary Camp agent & Hardener Virals Secret 3 Secret 0.1775 g Total (pin) % of Total Weight 100.00 13.31 Total (mg) Chip (Dip) % of Total Weight Lonce with ab above verified via internal design controls, supplier dealarations, and /or analytical test data. 100 13.31 Total (mg) Total (mg) 7440-25.5 100 Lonce with above be UP circlives has been verified via internal basiloance in the sociologi reason to believe that the second final substance is NOT an internional ingredient in the second final substance, if a none of total Weig	Proprietary Resin	Trade Secret	Die Attach	0.139				Zinc (Metal)	7440-44-0	0.15	
Ord 744057.5 Wrie Bond 0.200 0.355 2.000 Balance 97 Nickel 744020 Paing on estemal leads (jmn) annaeled at 150°C of 1 hour 1.1250 1.997 11.250 Propetary (Exc) 744057.5 75 </td <td>Proprietary Curing agent & Hardener</td> <td>Trade Secret</td> <td>Die Attach</td> <td>0.023</td> <td>0.040</td> <td>225</td> <td></td> <td></td> <td>Total</td> <td>100.00</td> <td></td>	Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.040	225			Total	100.00	
Nicket 7440-02-0 Plansing on external leads (pine) / annealed at 150°C for 1 hour 1.125 1.997 11.250 Gold 7440-87-8 Plansing on external leads (pine) / annealed at 150°C for 1 hour 0.063 0.111 625 Total Total 100:00 Gold 7440-87-8 Plansing on external leads (pine) / annealed at 150°C for 1 hour 0.063 0.111 625 Total 100:00 Gold 7440-87-8 Plansing on external leads (pine) / annealed at 150°C for 1 hour 0.063 0.111 625 Total 100:00 Binne with head box 0.1775 gg Total Mass Total 100:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 177.50 1,000:00 174.0-57.5 100:00 100:00	Silicon	7440-21-3	Chip (Die)	7.500	13.313	75,000	1.33	(mg) Total	Die Attach	% of Total Weight	0.75
Plaining 7440-05-5 Plaining on external leads (pina) nameled at 150°C for 1 hour 0.063 0.111 625 0.01 7440-05-5 Plaining on external leads (pina) / annealed at 150°C for 1 hour 0.063 0.111 625 TOTALS: 100.000 177.500 1,000.000 13.31 Total (mg) Chip (Die) % of Total Weight use 2005/350C (chip - Lip) EU Directives). EU Directive 2002/350C (ROHS Directive).	Gold	7440-57-5	Wire Bond	0.200	0.355	2,000		Silver (Ag)	7440-22-4	79	
Gold 7440-67.5 Plasting on external leads (pms) / annealed at 150°C for 1 hour 0.003 0.111 625 Total Total 100.00 0.177.5 g Total Mass 107.100 1,77.500 1,000,000 1,33.3 Total (mp) Nie / 100.00 1,000,000 1,33.3 Total (mp) Nie / 100.00 1,000,000								Proprietary Resin		19	
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microductor device and its homogenous materials comply with EU Directive 202/55/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 100.00 area with he above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 0.36 (mg) Total Wire Bond % of Total Weight ance with he above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 0.36 (mg) Total Wire Bond % of Total Weight ance with he above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 0.36 (mg) Total Wire Bond % of Total Weight ance with he above EU Directives used by Microchip meet the ULS4 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at the complex/ing/pages/offerings/industries/chemicals/plastics/ 0.36 (mg) Total Vire Bond % of Total Weight vireels' may be made from PVC plastic. in which the specific product is shipped are made from polyvinyl choride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and rightal packing materials is true and correct to the best of the arrage sprovide of and test and significant toxic metals components. These estimates of the average weight of the see parts and the arrages provided in Material Safet provide and the average weight of the see parts and the average weight of anticipated bill and anticipated significant toxic metals components. These estimates		0 1775	g Total Mass			ſ		Doped Silicon	7440-21-3	100	
com/global/global/set/of prince/chip/set/of/set/set/set/set/set/set/set/set/set/set	rated's knowledge and belief as of the date of this doo	cument, there is no cred	ble reason to believe that the unavoidable impurity conce					Doped Gold	7440-57-5	100	
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tities provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's Palladium 7440-05-3 5.00 ions, sales order acknowledgement, and invoices.	riginal packing materials is true and correct to the best teteness and accuracy of data in this form because it ha ation is often protected from disclosure as trade secre rided only as estimates of the average weight of these j	of its knowledge and be to been compiled based ts and some information parts and the average we	lief, as of the date listed in this form. Microchip Technolo on the ranges provided in Material Safety Data Sheets pro- may not have been provided by subcontract assemblers eight of anticipated significant toxic metals components.	by Incorporate by ided by raw n and raw mater	d cannot guar naterial suppli ial suppliers. I	antee the ers. Supplier nformation		Nickel	7440-02-0	90.00	
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s Certificate of Compliance for semiconductor products.								Gold	7440-57-5	5.00	

			24		ination Base opper Alloy				geneous Materials: g. pc boards, display	/s)	JEDEC 97 Product Markin and/or Pkg. Labeling e1
Basic Solution: CAS Number Sub-Component Weight Note Regist Note	Semiconductor Device Type:	B3KE 48 IFB0	. ,	% Total	1	1				1	
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arranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's totations, sales order acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or	rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified via interna a chemical substance is absent from the list above, the chemical sul corporated's knowledge and belief as of the date of this document, 1 y, is not below the threshold of regulatory concern for any regulato plding compounds used by Microchip meet the UL94 V0 flammabilit ip://ul.com/global/eng/pages/offerings/industries/chemicals/plastics are protective "tubes" in which the specific product is shipped are me	th EU Directive 2002/95 al design controls, sup Ibstance is NOT an inte there is no credible rea ry scheme world-wide. ty standard for plastics	Dtal Mass /EC (RoHS Directive), EU Directive 2011/65/EU (plier declarations, and /or analytical test data. ntional ingredient in the semiconductor device son to believe that the unavoidable impurity co . You can access the UL iQTM family of databas	RoHS Recast Dire and, to the best o ncentration of the es to obtain a tes	ective) and wi of Microchip T e chemical sul at report at	th EU echnology bstance, if	0.81	Doped Silicon (mg) Total (mg) Total	7440-21-3 Wire Bond 7440-57-5 Total Plating on external leads (pins)	100 % of Total Weight 100.00 100.00 % of Total Weight	0.86
crochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or	rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified via interna a chemical substance is absent from the list above, the chemical sub corporated's knowledge and belief as of the date of this document, t y, is not below the threshold of regulatory concern for any regulato olding compounds used by Microchip meet the UL94 V0 flammabilit ty/lul.com/global/eng/pages/offerings/industries/chemicals/plastics he protective "tubes" in which the specific product is shipped are marked within "reels" may be made from PVC plastic. Iscrochip Technology Incorporated believes the information in this for eir original packing materials is true and correct to the best of its kn mpleteness and accuracy of data in this form because it has been c formation is often protected from disclosure as trade secrets and sc ovided only as estimates of the average weight of these parts and th	th EU Directive 2002/95 al design controls, sup bstance is NOT an inte there is no credible rea ry scheme world-wide. ty standard for plastics ade from polyvinyl chle prome concerning substa sowiedge and belief, as compiled based on the pome information may n he average weight of at	Detal Mass //EC (RoHS Directive), EU Directive 2011/65/EU (plier declarations, and /or analytical test data. Initional ingredient in the semiconductor device son to believe that the unavoidable impurity co . You can access the UL iQTM family of databas bride (PVC) plastic. "Window envelopes" used t inces restricted by RoHS in Microchip Technolo of the date listed in this form. Microchip Technolo of the date listed in this form. Microchip Technolo of the velocity of the date semble tricipated significant toxic metals components.	RoHS Recast Dire and, to the best o ncentration of the es to obtain a tes o hold the packin gy Incorporated's ology Incorporated's ology Incorporated y raw i provided by raw mate	of Microchip T of Microchip T o chemical sul at report at ag slip on the semiconduci ad cannot gua material suppliers.	th EU echnology bstance, if outer box and tor devices in irantee the liers. Supplier Information is	0.81	Coped Silicon (mg) Total (mg) Total (mg) Total Tin	7440-21-3 Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-31-5	100 % of Total Weight 100.00 100.00 % of Total Weight 95.50	0.86
his Certificate of Compliance for semiconductor products.	active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via interna chemical substance is absent from the list above, the chemical su orporated's knowledge and belief as of the date of this document, 1 is not below the threshold of regulatory concern for any regulator liding compounds used by Microchip meet the UL94 V0 flammabilit or/Jul.com/global/eng/pages/offerings/industries/chemicals/plastics aprotective "tubes" in which the specific product is shipped are mata tain "reels" may be made from PVC plastic. Protecting Technology Incorporated believes the information in this for ir original packing materials is true and correct to the best of its kin npleteness and accuracy of data in this form because it has been cor- sided only as estimates of the average weight of these parts and the lopants, metals, and non-metal materials contained within silicon cor- prochip Technology Incorporated does not provide any warranty, en- ranchis provided by Microchip Technology Incorporated and its su	th EU Directive 2002/95 al design controls, sup bstance is NOT an inte there is no credible rea ry scheme world-wide. ty standard for plastics ade from polyvinyl chlu- prom concerning substa sowpiled based on the ome information may n he average weight of a devices (silicon IC) in ti xpress or implied, with	betal Mass //EC (RoHS Directive), EU Directive 2011/65/EU (plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device son to believe that the unavoidable impurity co . You can access the UL iQTM family of databas bride (PVC) plastic. "Window envelopes" used t inces restricted by RoHS in Microchip Technolo of the date listed in this form. Microchip Technolo of the date listed in Material Safety Data Sheets ot have been provided by subcontract assembli- ticipated significant toxic metals components. he finished parts.	RoHS Recast Dire and, to the best o ncentration of the es to obtain a tes o hold the packin gy Incorporated's ology Incorporate provided by raw i ers and raw mate These estimates aration. The excli	ective) and wi of Microchip T e chemical sul at report at ag slip on the semiconduct ad cannot gua material supp rial suppliers. do not includ	th EU echnology bstance, if outer box and tor devices in rrantee the liers. Supplier Information is e trace levels product	0.81	Coped Silicon (mg) Total (mg) Total (mg) Total Tin Silver	7440-21-3 Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-31-5 7440-22-4 7440-50-8	100 % of Total Weight 100.00 % of Total Weight 95.50 4.00 0.50	0.86

MICROCHIP Semiconductor Device Type:	B1KE 48 1	[FBGA 8x10x1.2mm (9T)		ination Base opper Alloy (jeneous Materials: . pc boards, displays	5)	JEDEC 97 Product Markin and/or Pkg. Labeling e1
Semiconductor Device Type.		"Contained In"	% Total						1	
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	71.63	(mg) Total	Mold Compound	% ot Total Weight	50.3
FUSED SILICA	60676-86-0	Mold Compound	38.981	55.509	389,810		FUSED SILICA	60676-86-0	77.50	
EPOXY RESINS, CURED	Trade Secret	Mold Compound	4.905	6.984	49,048		EPOXY RESINS,	Trade Secret	9.75	
HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4.905	6.984	49,048		CURED HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	9.75	
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.258	1.791	12,580		CRYSTALLINE SILICA	14808-60-7	2.50	
CARBON BLACK	1333-86-4	Mold Compound	0.252	0.358	2,515		CARBON BLACK	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	8.052	11.467	80,524			Total		
Glass fibers	65997-17-3	Lead Frame	4.800	6.835	48,000	31.94	(mg) Total	Lead Frame	% of Total Weight	22.43
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	4.800	6.835	48,000		Copper	7440-50-8	35.90	
Silica, chemically prepared	7631-86-9	Lead Frame	1.794	2.555	17,944		Glass fibers	65997-17-3	21.40	
Nickel	7440-02-0	Lead Frame	0.875	1.246	8,748		Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.561	0.799	5,608		Silica, chemically			
	14807-96-6	Lead Frame	0.449	0.639	4 486		prepared	7631-86-9 7440-02-0	8.00 3.90	
Magnesium silicate Araldite GY 250	14807-96-6 25068-38-6	Lead Frame	0.449	0.639	4,486		Nickel Barite	7440-02-0 7727-43-7	3.90	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.449	0.639	1,794		Magnesium silicate	14807-96-6	2.50	
Misc.	system	Lead Frame	0.336	0.230	3,365		Araldite GY 250	25068-38-6	2.00	
Wise.	System	Lead Hame	0.000	0.473	3,303		(2-	20000 00 0	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.112	0.160	1,122		Methoxymethylethoxy)pro panol	34590-94-8	0.80	
Gold	7440-57-5	Lead Frame	0.022	0.032	224		Misc.	system	1.50	
Silver	7440-22-4	Die Attach	0.552	0.786	5,520		Aluminium-hydroxide- oxide	24623-77-6	0.50	
Basic Duromer: Phenolic resin (Compound of polymeric network)	26834-02-6	Die Attach	0.138	0.197	1,380		Gold	7440-57-5	0.50	
Silicon	7440-21-3	Chip (Die)	7.650	10.894	76,500		Goid	Total		
Doped Gold	7440-57-5	Wire Bond	0.860	1.225	8.600	0.98	(mg) Total	Die Attach	% of Total Weight	0.69
Tin	7440-31-5	Plating on external leads (pins)	17.257	24.574	172,569	0.00	Silver	7440-22-4	80.00	0.00
Silver	7440-22-4	Plating on external leads (pins)	0.723	1.029	7,228		Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	20.00	
Copper	7440-50-8	Plating on external leads (pins)	0.090	0.129	904		polymenc network)	Z0034-02-0 Total		
oopper	140 00 0	TOTA		142.400	1,000,000	10.89	(mg) Total	Chip (Die)	% of Total Weight	7.65
	0 1424	g Total Mass			,,		Doped Silicon	7440-21-3	100	
is semiconductor device and its homogenous materials comply wit rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	th EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (f	RoHS Recast Dire	ctive) and wit	h EU			Total	I	
ompliance with the above EU Directives has been verified via interna	a design controls	, supplier declarations, and /or analytical test data.				1.22	(mg) Total	Wire Bond	% of Total Weight	0.86
a chemical substance is absent from the list above, the chemical su acorporated's knowledge and belief as of the date of this document, ny, is not below the threshold of regulatory concern for any regulato	there is no credibl	le reason to believe that the unavoidable impurity cor					Doped Gold	7440-57-5	100.00	
	w standard for als									•
Iolding compounds used by Microchip meet the UL94 V0 flammabilit ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics		stics. You can access the UL IQTM family of databas	es to obtain a tes	t report at				Total	100.00	
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics he protective "tubes" in which the specific product is shipped are m	5			•	outer box and	25.73	(mg) Total	Total Plating on external leads (pins)	100.00 % of Total Weight	18.07
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics he protective "tubes" in which the specific product is shipped are m ertain "reels" may be made from PVC plastic. hicrochip Technology Incorporated believes the information in this for neir original packing materials is true and correct to the best of its kn ompleteness and accuracy of data in this form because it has been c iformation is often protected from disclosure as trade secrets and st rovided only as estimates of the average weight of these parts and th	ade from polyviny orm concerning su nowledge and beli compiled based or ome information n he average weight	I chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technolog ef, as of the date listed in this form. Microchip Techno t the ranges provided in Material Safety Data Sheets nay not have been provided by subcontract assemble of anticipated significant toxic metals components.	o hold the packin gy Incorporated's ology Incorporate provided by raw r ers and raw mater	g slip on the o semiconduct d cannot gua naterial suppl ial suppliers.	or devices in rantee the iers. Supplier Information is	25.73	(mg) Total Tin	Plating on external		18.07
	ade from polyviny orm concerning su nowledge and beli compiled based or ome information n he average weight devices (silicon IC xpress or implied,	I chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technolog ef, as of the date listed in this form. Microchip Technol the ranges provided in Material Safety Data Sheets any not have been provided by subcontract assemble t of anticipated significant toxic metals components. c) in the finished parts.	o hold the packin gy Incorporated's ology Incorporate orovided by raw r res and raw mater These estimates aration. The exclu	g slip on the o semiconduct d cannot guar naterial suppl ial suppliers. do not include usive, limited	or devices in rantee the iers. Supplier Information is e trace levels product	25.73		Plating on external leads (pins)	% of Total Weight	18.07
tp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics are protective "tubes" in which the specific product is shipped are m rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this for eir original packing materials is true and correct to the best of its kn mpleteness and accuracy of data in this form because it has been o formation is often protected from disclosure as trade secrets and so ovided only as estimates of the average weight of these parts and ti dopants, metals, and non-metal materials contained within silicon of crochip Technology Incorporated does not provide any warranty, et arranties provided by Microchip Technology Incorporated and its su	ade from polyviny orm concerning st towledge and belik compiled based or ome information n he average weight devices (silicon IC xpress or implied, ubsidiaries are con o Material Content	A chloride (PVC) plastic. "Window envelopes" used to abstances restricted by RoHS in Microchip Technolog ef, as of the date listed in this form. Microchip Technol the ranges provided in Material Safety Data Sheets nay not have been provided by subcontract assemble to f anticipated significant toxic metals components.) in the finished parts. with respect to the information provided in this decl tained in Microchip's standard terms and conditions Declarations and shall not be liable for any damages	o hold the packin gy Incorporated's ology Incorporate provided by raw r ers and raw mater These estimates aration. The exclu of sale. These ar	g slip on the o semiconduct d cannot gua naterial suppli ial suppliers. do not include usive, limited j e provided in t, consequent	or devices in rantee the iers. Supplier Information is a trace levels product Microchip's tial or	25.73	Tin	Plating on external leads (pins) 7440-31-5	% of Total Weight 95.50	18.07

				ination Base opper Alloy (geneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Markin and/or Pkg. Labeling
Semiconductor Device Ty	pe: 129 TFBGA 7x7x	1.0 (GW)								e1
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	51.44	(mg) Total	Mold Compound	% ot Total Weight	46.34
Silica, vitreous (or fused)	60676-86-0	Mold Compound	41.567	46.139	415,670		Silica, vitreous (or fused)	60676-86-0	89.70	
Epoxy Resin	Trade Secret	Mold Compound	2.549	2.829	25,487		Epoxy Resin	Trade Secret	5.50	
Phenolic Resin	Trade Secret	Mold Compound	2.085	2.315	20,853		Phenolic Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.139	0.154	1,390	_	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	13.175	14.625	131,753			Total		
Glass fibers	65997-17-3	Lead Frame	7.854	8.718	78,538	40.74	(mg) Total	Lead Frame	% of Total Weight	36.7
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	7.854	8.718	78,538	-	Copper	7440-50-8	35.90	
Silica, chemically prepared	7631-86-9	Lead Frame	2.936	3.259	29,360	-	Glass fibers	65997-17-3	21.40	
Nickel	7440-02-0	Lead Frame	1.431	1.589	14,313	Phenol formaldeb	/de, (chloromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.918	1.018	9,175		Silica, chemically prepared	7631-86-9	8.00	
Magnesium silicate	14807-96-6	Lead Frame	0.734	0.815	7,340]	Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.734	0.815	7,340]	Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.294	0.326	2,936	4	Magnesium silicate	14807-96-6	2.00	
Misc.	system	Lead Frame	0.551	0.611	5,505		Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide Gold	24623-77-6	Lead Frame	0.184	0.204	1,835	(2-Me	thoxymethylethoxy)propanol Misc.	34590-94-8	0.80	
Silica, vitreous (or fused)	7440-57-5 60676-86-0	Lead Frame	0.037	0.041 0.311	367 2.800	-		system	1.50	
	Trade Secret	Die Attach Die Attach	0.280	0.311	2,800	-	Aluminium-hydroxide-oxide Gold	24623-77-6 7440-57-5	0.50	
Epoxy/Acrylic Silicon		Chip (Die)	3.490	3.874	34.900	-	Goid	Total		
	7440-21-3 7440-50-8	Wire Bond	0.934	3.874	34,900 9,341	0.39	(mg) Total	Die Attach	% of Total Weight	0.35
Copper Palladium	7440-50-8	Wire Bond	0.934	0.029	259	0.39	Silica, vitreous (or fused)	60676-86-0	% of Total Weight 80.00	0.35
Tin	7440-05-3	Plating on external leads (pins)	11.734	13.025	117.344	4	Epoxy/Acrylic	Trade Secret	20.00	
Silver	7440-31-5	Plating on external leads (pins)	0.365	0.405	3,648	-	Epoxy/Acrylic	Trade Secret		
Copper	7440-22-4 7440-50-8	Plating on external leads (pins)	0.061	0.403	608	3.87	(mg) Total	Chip (Die)	% of Total Weight	3.49
Сорры	7440-30-8		ALS: 100.000	111.000	1.000.000	5.07	Doped Silicon	7440-21-3	100	3.43
	0.111 g To				.,,			Total		
semiconductor device and its homogenous materials comp										
		EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast Dire	ctive) and wit	h EU	4.07		Wine David	0/ of Total Mainha	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast Dire	ctive) and wit	h EU	1.07	(mg) Total	Wire Bond	% of Total Weight	0.96
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ppliance with the above EU Directives has been verified via in	nternal design controls, supp		(RoHS Recast Dire	ctive) and wit	h EU	1.07	(mg) Total Copper	Wire Bond 7440-50-8	% of Total Weight 97.30	0.96
pliance with the above EU Directives has been verified via in themical substance is absent from the list above, the chemic rporated's knowledge and belief as of the date of this docum	cal substance is NOT an inter nent, there is no credible reas	blier declarations, and /or analytical test data. ntional ingredient in the semiconductor devic	and, to the best o	f Microchip Te	echnology	1.07				0.96
	cal substance is NOT an inter nent, there is no credible rea: gulatory scheme world-wide. nability standard for plastics.	blier declarations, and /or analytical test data. ntional ingredient in the semiconductor devic son to believe that the unavoidable impurity o	and, to the best o	f Microchip Te chemical sub	echnology	1.07	Copper	7440-50-8	97.30 2.70	0.96
pliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic rporated's knowledge and belief as of the date of this docun is not below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 flamm	cal substance is NOT an inter- nent, there is no credible rear gulatory scheme world-wide. nability standard for plastics. astics/	blier declarations, and /or analytical test data. Intional ingredient in the semiconductor devic son to believe that the unavoidable impurity of You can access the UL iQTM family of datab	e and, to the best o oncentration of the ses to obtain a tes	f Microchip Te chemical sub t report at	echnology ostance, if		Copper	7440-50-8 7440-05-3	97.30 2.70	0.96
npliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic rporated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 flamm ://ul.com/global/eng/pages/offerings/industries/chemicals/pl: protective "tubes" in which the specific product is shipped a	cal substance is NOT an inter nent, there is no credible rear- julatory scheme world-wide. nability standard for plastics. astics/ are made from polyvinyl chlo this form concerning substan- its knowledge and belief, as seen compiled based on the r and some information may nu- and the average weight of ar	blier declarations, and /or analytical test data. Intional ingredient in the semiconductor devic son to believe that the unavoidable impurity of You can access the UL iQTM family of datab- bride (PVC) plastic. "Window envelopes" used nces restricted by RoHS in Microchip Techno of the date listed in this form. Microchip Tech and have been provided by subcontract assem ticipated significant toxic metals component	e and, to the best o oncentration of the uses to obtain a tes to hold the packin oggy Incorporated's nology Incorporated's provided by raw n iers and raw mate	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot gua naterial suppl ial suppliers.	echnology sstance, if outer box and or devices in rantee the iers. Supplier Information is	13.50	Copper Palladium	7440-50-8 7440-05-3 Total Plating on external	97.30 2.70 100.00	
ppliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic rporated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any reg ding compounds used by Microchip meet the UL94 V0 flamm ://ul.com/global/eng/pages/offerings/industries/chemicals/pl: protective "tubes" in which the specific product is shipped ain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the information in to ordiginal packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has b rmation is often protected from disclosure as trade secrets a vided only as estimates of the average weight of these parts	cal substance is NOT an inter- nent, there is no credible rear- ulatory scheme world-wide. nability standard for plastics. astics/ are made from polyvinyl chlo this form concerning substan- its knowledge and belief, as seen compiled based on the r and some information may n and the average weight of ar icon devices (silicon IC) in the nty, express or implied, with	blier declarations, and /or analytical test data. Intional ingredient in the semiconductor devic son to believe that the unavoidable impurity of You can access the UL iQTM family of datab- bride (PVC) plastic. "Window envelopes" used inces restricted by RoHS in Microchip Technol of the date listed in this form. Microchip Tech anges provided in Material Safety Data Sheet ot have been provided by subcontract assemi- ticipated significant toxic metals component te finished parts. respect to the information provided in this der-	e and, to the best o oncentration of the ses to obtain a tes to hold the packin ology Incorporated's nology Incorporate s provided by raw i iders and raw mate . These estimates claration. The excli	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot gua naterial suppli ial suppliers. do not include usive, limited	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product	13.50	Copper Palladium (mg) Total	7440-50-8 7440-05-3 Total Plating on external leads (pins)	97.30 2.70 100.00 % of Total Weight	
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic porated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any reg ing compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pl: portective "tubes" in which the specific product is shipped is in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the information in for original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has b mation is often protected from disclosure as trade secrets a ided only as estimates of the average weight of these parts opants, metals, and non-metal materials contained within sil pochip Technology Incorporated does not provide any warrat anties provided by Microchip Technology Incorporated and attions, sales order acknowledgement, and invoices. Dochip disclaims any duty to notify users of updates or chan- wise, suffered by users or third parties as a result of the users	cal substance is NOT an intenent, there is no credible rea- julatory scheme world-wide. hability standard for plastics. astics/ are made from polyvinyl chlor this form concerning substan- its knowledge and belief, as eeen compiled based on the nd some information may in and the average weight of ar icon devices (silicon IC) in the nty, express or implied, with its subsidiaries are containe ges to Material Content Deck	blier declarations, and /or analytical test data. Intional ingredient in the semiconductor devic son to believe that the unavoidable impurity of You can access the UL iQTM family of datab- wide (PVC) plastic. "Window envelopes" used the date listed in this form. Microchip Techno of the date listed in this form. Microchip Techno of the date listed in this form. Microchip Techno thave been provided by subcontract assemi- ticipated significant toxic metals component the finished parts. respect to the information provided in this ded d in Microchip's standard terms and conditio arations and shall not be liable for any damage	e and, to the best o oncentration of the uses to obtain a tes to hold the packin ology Incorporated's nology Incorporated bers and raw mate to These estimates claration. The exclu- us of sale. These ar as, direct or indirect	f Microchip Te chemical sub report at g slip on the o semiconduct d cannot gua naterial suppliers. do not includo isive, limited e provided in t, consequent	echnology stance, if outer box and or devices in rantee the iers. Supplier Information is a trace levels product Microchip's tial or	13.50	Copper Palladium (mg) Total Tin	7440-50-8 7440-05-3 Total Plating on external leads (pins) 7440-31-5	97.30 2.70 100.00 % of Total Weight 96.50	
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemic porated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any reg ling compounds used by Microchip meet the UL94 V0 flamm //ul.com/global/eng/pages/offerings/industries/chemicals/pli protective "tubes" in which the specific product is shipped in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in to original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has mation is often protected from disclosure as trade secrets a ided only as estimates of the average weight of these parts opants, metals, and non-metal materials contained within sil ochip Technology Incorporated does not provide any warral anties provided by Microchip Technology Incorporated and	cal substance is NOT an intenent, there is no credible rea- julatory scheme world-wide. hability standard for plastics. astics/ are made from polyvinyl chlor this form concerning substan- its knowledge and belief, as eeen compiled based on the nd some information may in and the average weight of ar icon devices (silicon IC) in the nty, express or implied, with its subsidiaries are containe ges to Material Content Deck	blier declarations, and /or analytical test data. Intional ingredient in the semiconductor devic son to believe that the unavoidable impurity of You can access the UL iQTM family of datab- wide (PVC) plastic. "Window envelopes" used the date listed in this form. Microchip Techno of the date listed in this form. Microchip Techno of the date listed in this form. Microchip Techno thave been provided by subcontract assemi- ticipated significant toxic metals component the finished parts. respect to the information provided in this ded d in Microchip's standard terms and conditio arations and shall not be liable for any damage	e and, to the best o oncentration of the uses to obtain a tes to hold the packin ology Incorporated's nology Incorporated bers and raw mate to These estimates claration. The exclu- us of sale. These ar as, direct or indirect	f Microchip Te chemical sub report at g slip on the o semiconduct d cannot gua naterial suppliers. do not includo isive, limited e provided in t, consequent	echnology stance, if outer box and or devices in rantee the iers. Supplier Information is a trace levels product Microchip's tial or	13.50	Copper Palladium (mg) Total Tin Silver	7440-50-8 7440-05-3 Total Plating on external leads (pins) 7440-31-5 7440-22-4	97.30 2.70 100.00 % of Total Weight 96.50 3.00 0.50	

PdCu

AICROCHIP Semiconductor Device Type:	MME 34 WFB0	GA 4x6x0.8mm (2M/2U)		ination Base opper Alloy (Package Homoge 8.1 Electronics (e.g. p			JEDEC 97 Product Marking and/or Pkg. Labeling e1
Desis Substance		"Contained In" Sub-Component	% Total Weight	m ala ant		14.80	(mg) Total	Mold Compound	% ot Total Weight	39.89
Basic Substance FUSED SILICA	60676-86-0		35.901	mg/part 13.319	ppm 359,010		FUSED SILICA	60676-86-0	90.00	
EPOXY RESINS, CURED	Trade Secret	Mold Compound Mold Compound	1.935	0.718	19.347	-	EPOXY RESINS, CURED	Trade Secret	4.85	
H CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN		Mold Compound	1.935	0.718	19,347		EPOXY PHENOL RESIN	Trade Secret	4.85	
CARBON BLACK	1333-86-4	Mold Compound	0.120	0.044	1.197	-	CARBON BLACK	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.935	4.057	109.351		on about benotic	Total		u .
Glass fibers	65997-17-3	Lead Frame	6.518	2.418	65,184	11.30	(mg) Total	Lead Frame	% of Total Weight	30.46
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	6.518	2.418	65,184		Copper	7440-50-8	35.90	00110
Silica, chemically prepared	7631-86-9	Lead Frame	2.437	0.904	24.368	-	Glass fibers	65997-17-3	21.40	
Nickel	7440-02-0	Lead Frame	1.188	0.441	11.879	enol formaldebyde (ch	loromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.762	0.283	7.615	onoi, ronnaidonydo, (or	Silica, chemically prepared	7631-86-9	8.00	
Magnesium silicate	14807-96-6	Lead Frame	0.609	0.226	6.092	1	Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.609	0.226	6.092	1	Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.244	0.090	2.437	1	Magnesium silicate	14807-96-6	2.00	
Misc.	system	Lead Frame	0.457	0.170	4,569	1	Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.152	0.057	1.523	(2-Me	thoxymethylethoxy)propanol	34590-94-8	0.80	
Gold	7440-57-5	Lead Frame	0.030	0.011	305	(2 110	Misc.	system	1.50	
FUSED SILICA	60676-86-0	Die Attach	9.576	3.553	95,760		Aluminium-hydroxide-oxide	24623-77-6	0.50	
Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	Die Attach	2.394	0.888	23,940		Gold	7440-57-5	0.10	
Silicon	7440-21-3	Chip (Die)	3,790	1.406	37,900		Cold	Total		u .
Doped Gold	7440-57-5	Wire Bond	0.950	0.352	9,500	4.44	(mg) Total	Die Attach	% of Total Weight	11.97
Tin	7440-31-5	Plating on external leads (pins)	12.358	4.585	123.577	7.44	FUSED SILICA	60676-86-0	80.00	11.57
Silver	7440-22-4	Plating on external leads (pins)	0.518	0.192	5.176	Po Po				
	7440-50-8					Da	sic Duromer:Phenolic resin	26834-02-6	20.00	l
Copper	7440-50-8	Plating on external leads (pins)	0.065	0.024	647			Total	100.00	3 79
Copper	0.0371 g T	Plating on external leads (pins) TOTA	0.065 LS: 100.000	0.024 37.100	647 1,000,000	1.41	(mg) Total Doped Silicon		100.00 % of Total Weight 100	3.79
Copper semiconductor device and its homogenous materials comply wi tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.0371 g T th EU Directive 2002/95	Plating on external leads (pins) TOTA fotal Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU (f	0.065 LS: 100.000	0.024 37.100	647 1,000,000		(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight 100	3.79
Copper semiconductor device and its homogenous materials comply wi tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via intern hemical substance is absent from the list above, the chemical su porated's knowledge and belief as of the date of this document,	0.0371 g T th EU Directive 2002/95 al design controls, sup ibstance is NOT an inte there is no credible rea	Plating on external leads (pins) TOTA Total Mass S/EC (RoHS Directive), EU Directive 2011/65/EU (F oplier declarations, and /or analytical test data. entional ingredient in the semiconductor device a ason to believe that the unavoidable impurity con	0.065 LS: 100.000 OHS Recast Dire	0.024 37.100 ective) and with	647 1,000,000 h EU echnology	1.41	(mg) Total Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
Copper semiconductor device and its homogenous materials comply wi ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via intern chemical substance is absent from the list above, the chemical su porated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regulatu ting compounds used by Microchip meet the UL94 V0 flammabili //ul.com/global/eng/pages/offerings/industries/chemicals/plastic	0.0371 g T th EU Directive 2002/9 al design controls, sup ibstance is NOT an inte there is no credible re- ory scheme world-wide ty standard for plastics s/	Plating on external leads (pins) TOTA Total Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU (f oplier declarations, and /or analytical test data. antional ingredient in the semiconductor device a ason to believe that the unavoidable impurity col s. You can access the UL iQTM family of database	0.065 LS: 100.000 oHS Recast Dire nd, to the best o centration of the s to obtain a tes	0.024 37.100 ective) and with of Microchip Te e chemical sub t report at	647 1,000,000 h EU echnology stance, if	0.35	(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	
Copper semiconductor device and its homogenous materials comply wi tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via intern hemical substance is absent from the list above, the chemical su rporated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regulatu ling compounds used by Microchip meet the UL94 V0 flammabili	0.0371 g T th EU Directive 2002/9 al design controls, sup ibstance is NOT an inte there is no credible re- ory scheme world-wide ty standard for plastics s/	Plating on external leads (pins) TOTA Total Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU (f oplier declarations, and /or analytical test data. antional ingredient in the semiconductor device a ason to believe that the unavoidable impurity col s. You can access the UL iQTM family of database	0.065 LS: 100.000 oHS Recast Dire nd, to the best o centration of the s to obtain a tes	0.024 37.100 ective) and with of Microchip Te e chemical sub t report at	647 1,000,000 h EU echnology stance, if	0.35	(mg) Total Doped Silicon (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	
Copper semiconductor device and its homogenous materials comply wi ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via intern hemical substance is absent from the list above, the chemical su prorated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regulato ling compounds used by Microchip meet the UL94 V0 flammabili //ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are m	0.0371 g T th EU Directive 2002/95 al design controls, sup ibstance is NOT an inte there is no credible rea ory scheme world-wide ty standard for plastics s/ ade from polyvinyl chl orm concerning substa owledge and belief, at compiled based on the ome information may r he average weight of a	Plating on external leads (pins) TOTA Total Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU (f opplier declarations, and /or analytical test data. entional ingredient in the semiconductor device a ason to believe that the unavoidable impurity cor 3. You can access the UL iQTM family of database loride (PVC) plastic. "Window envelopes" used to ances restricted by RoHS in Microchip Technolog s of the date listed in this form. Microchip Technolog s of the date listed in this form. Microchip Technolog s of the date listed in Material Safety Data Sheets j to thave been provided by subcontract assemble inticipated significant toxic metals components.	0.065 LS: 100.000 oHS Recast Dire nd, to the best o centration of the s to obtain a tes hold the packin y Incorporated's logy Incorporate rovided by raw i	0.024 37.100 active) and witi of Microchip Te e chemical sub it report at ig slip on the o semiconductor a semiconductor a semiconductor irial suppliers. I	647 1,000,000 h EU echnology stance, if outer box and or devices in rantee the iers. Supplier Information is	1.41 0.35 4.80	(mg) Total Doped Silicon (mg) Total Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00 100.00 100.00 100.00	0.95
Copper semiconductor device and its homogenous materials comply wi tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via intern hemical substance is absent from the list above, the chemical st porated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regulat ling compounds used by Microchip meet the UL94 V0 flammabili //ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are n in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in this fo original packing materials is true and correct to the best of its k pleteness and accuracy of data in this form because it has been mation is often protected from disclosure as trade secrets and a ided only as estimates of the average weight of these parts and i	0.0371 g T th EU Directive 2002/95 al design controls, sup ibstance is NOT an inte there is no credible rei pry scheme world-wide ty standard for plastics s/ ade from polyvinyl chl orm concerning substa nowledge and belief, as compiled based on the ome information may r he average weight of a devices (silicon IC) in 1 xpress or implied, with	Plating on external leads (pins) TOTA Total Mass S/EC (RoHS Directive), EU Directive 2011/65/EU (f opplier declarations, and /or analytical test data. antional ingredient in the semiconductor device a ason to believe that the unavoidable impurity cor S. You can access the UL IQTM family of database loride (PVC) plastic. "Window envelopes" used to ances restricted by RoHS in Microchip Technolog s of the date listed in this form. Microchip Technolog s of the date listed in Material Safety Data Sheets p tot have been provided by subcontract assemble inticipated significant toxic metals components. the finished parts. a respect to the information provided in this decl	0.065 LS: 100.000 oHS Recast Dire nd, to the best of centration of the s to obtain a tes b hold the packin y Incorporated's logy Incorporated's rovided by raw to rs and raw mate These estimates aration. The excli	0.024 37.100 active) and witi of Microchip Te e chemical sub it report at g slip on the o s semiconduct ad cannot guar material suppli rial suppliers. do not include usive, limited p	647 1,000,000 h EU schnology ostance, if outer box and or devices in rantee the iers. Supplier Information is trace levels product	1.41 0.35 4.80	(mg) Total Doped Silicon (mg) Total Doped Gold (mg) Total (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100 % of Total Weight 100.00 100.00 % of Total Weight	0.95
Copper semiconductor device and its homogenous materials comply wi tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Mance with the above EU Directives has been verified via intern semical substance is absent from the list above, the chemical su porated's knowledge and belief as of the date of this document, s not below the threshold of regulatory concern for any regulato ng compounds used by Microchip meet the UL94 V0 flammabili (ul.com/global/eng/pages/offerings/industries/chemicals/plastic: rotective "tubes" in which the specific product is shipped are m n "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in this for piginal packing materials is true and correct to the best of its ko leteness and accuracy of data in this form because it has been in antion is often protected from disclosure as trade secrets and s aded only as estimates of the average weight of these parts and i pants, metals, and non-metal materials contained within silicon chip Technology Incorporated does not provide any warranty, e nites provided by Microchip Technology Incorporated and its si	0.0371 g T th EU Directive 2002/95 al design controls, sup ibstance is NOT an inte there is no credible re- ty scheme world-wide ty standard for plastice s/ ade from polyvinyl chl orm concerning substa- nowledge and belief, as compiled based on the ome information may r he average weight of a devices (silicon IC) in f express or implied, with ubsidiaries are contain o Material Content Dec	Plating on external leads (pins) TOTA TOTA Total Mass S/EC (RoHS Directive), EU Directive 2011/65/EU (f opplier declarations, and /or analytical test data. entional ingredient in the semiconductor device a asson to believe that the unavoidable impurity cor s. You can access the UL iQTM family of database loride (PVC) plastic. "Window envelopes" used to ances restricted by RoHS in Microchip Technolog s of the date listed in this form. Microchip Technolog s of the date listed in this form. Microchip Technolog s of the date listed in this form. Microchip Technolog s of the date listed in this form. Microchip Technolog s of the date listed in this form. Microchip Technolog s of the date listed in this form. Microchip Technolog not have been provided by subcontract assemble inticipated significant toxic metals components. the finished parts. n respect to the information provided in this decl ed in Microchip's standard terms and conditions larations and shall not be liable for any damages	D.065 LS: 100.000 oHS Recast Dire centration of the sto obtain a tes hold the packin y Incorporated's logy Incorporated's logy Incorporate rovided by raw rs and raw mate These estimates aration. The excl of sale. These ar direct or indirect	0.024 37.100 ective) and witi of Microchip Te e chemical sub it report at g slip on the o semiconductric ad cannot guar material suppliers. I do not include usive, limited p re provided in 1 ct, consequent	647 1,000,000 h EU echnology stance, if or devices in rantee the iers. Supplier Information is t trace levels oroduct Microchip's ial or	1.41 0.35 4.80	(mg) Total Doped Silicon (mg) Total Doped Gold (mg) Total Tin	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-31-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00 100.00 95.50	0.95

				nination Base Copper Alloy (•		Package Homogened Electronics (e.g. pc I			JEDEC 97 Product Markin and/or Pkg. Labeling
Semiconductor Device Typ	e: MAQE 48 WFE									e1
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	14.50	(mg) Total	Mold Compound	% ot Total Weight	50.51
FUSED SILICA	60676-86-0	Mold Compound	39.144	11.234	391,437		FUSED SILICA	60676-86-0	77.50	
EPOXY RESINS, CURED	Trade Secret	Mold Compound	4.925	1.414	49,252	+	EPOXY RESINS, CURED	Trade Secret	9.75	
HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4.925	1.414	49.252	HIGH MOLECULAR EPOXY		Trade Secret	9.75	
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.263	0.363	12.633		CRYSTALLINE SILICA	14808-60-7	2.50	
CARBON BLACK	1333-86-4	Mold Compound	0.253	0.072	2,526	1	CARBON BLACK	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	8.616	2.473	86,160	1		Total	100.00	L
Glass fibers	65997-17-3	Lead Frame	5.136	1.474	51,360	6.89	(mg) Total	Lead Frame	% of Total Weight	24
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	5,136	1.474	51.360		Copper	7440-50-8	35.90	
Silica, chemically prepared	7631-86-9	Lead Frame	1.920	0.551	19,200	1	Glass fibers	65997-17-3	21.40	
Nickel	7440-02-0	Lead Frame	0.936	0.269	9,360	Phenol, formaldehyde, (chl	oromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.600	0.172	6,000		Silica, chemically prepared		8.00	
Magnesium silicate	14807-96-6	Lead Frame	0.480	0.138	4,800	1	Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.480	0.138	4,800	T	Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.192	0.055	1,920	T	Magnesium silicate	14807-96-6	2.00	
Misc.	system	Lead Frame	0.360	0.103	3,600	1	Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.120	0.034	1,200	(2-Meth	noxymethylethoxy)propanol	34590-94-8	0.80	
Gold	7440-57-5	Lead Frame	0.024	0.007	240	1 ,	Misc.	system	1.50	
Solid Epoxy Resin	Trade Secret	Die Attach	0.020	0.006	195		Aluminium-hydroxide-oxide	24623-77-6	0.50	
Phenol Resin	Trade Secret	Die Attach	0.020	0.006	195	1	Gold		0.10	
Fused Silica	60676-86-0	Die Attach	0.052	0.015	520	1	u	Total	100.00	-
Liquid epoxy resin	Trade Secret	Die Attach	0.020	0.006	195	0.04	(mg) Total	Die Attach	% of Total Weight	0.13
Synthetic Rubber	Trade Secret	Die Attach	0.020	0.006	195		Solid Epoxy Resin	Trade Secret	15.00	
Silicon	7440-21-3	Chip (Die)	5.980	1.716	59,800	1	Phenol Resin		15.00	
Doped Gold	7440-57-5	Wire Bond	1.870	0.537	18,700	1	Fused Silica	60676-86-0	40.00	
Tin	7440-31-5	Plating on external leads (pins)	16.722	4,799	167,221	1	Liquid epoxy resin	Trade Secret	15.00	
Silver	7440-22-4	Plating on external leads (pins)	0.700	0.201	7,004	1	Synthetic Rubber	Trade Secret	15	
Copper	7440-50-8	Plating on external leads (pins)	0.088	0.025	876	1	<u> </u>	Total	100.00	L
		TOT	ALS: 100.000	28.700	1,000,000	1.72	(mg) Total	Chip (Die)	% of Total Weight	5.98
	0.0287 a Te						Doped Silicon	7440-21-3	100	
s semiconductor device and its homogenous materials comply ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2002/95	/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast Dir	ective) and wi	ith EU	0.54	(mg) Total	Wire Bond	% of Total Weight	1.87
npliance with the above EU Directives has been verified via inte	ernal design controls, sup	plier declarations, and /or analytical test data					Doped Gold	7440-57-5	100.00	
chemical substance is absent from the list above, the chemica rporated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu ding compounds used by Microchip meet the UL94 V0 flamma	ent, there is no credible rea latory scheme world-wide bility standard for plastics	ason to believe that the unavoidable impurity	concentration of the	he chemical su		5.03	(mq) Total	Total Plating on external	100.00 % of Total Weight	17.51
://ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar certain "reels" may be made from PVC plastic.		oride (PVC) plastic. "Window envelopes" use	d to hold the pack	ing slip on the	e outer box		Tin	leads (pins) 7440-31-5	95.50	-
rochip Technology Incorporated believes the information in the neir original packing materials is true and correct to the best of upleteness and accuracy of data in this form because it has bee plier information is often protected from disclosure as trade si mation is provided only as estimates of the average weight of ude trace levels of dopants, metals, and non-metal materials co	f its knowledge and belief en compiled based on the ecrets and some informati f these parts and the avera	as of the date listed in this form. Microchip T ranges provided in Material Safety Data Shee on may not have been provided by subcontra ge weight of anticipated significant toxic met	echnology Incorp is provided by raw ct assemblers and	orated cannot material supp raw material s	guarantee the pliers. suppliers.		Silver	7440-22-4	4.00	
rochip Technology Incorporated does not provide any warrant ranties provided by Microchip Technology Incorporated and it tations, sales order acknowledgement, and invoices.							Copper	7440-50-8	0.50	

AICROCHIP Semiconductor Devic	e Type: M1QE 48 WFB	3GA 4x6x0.8mm (41)		ination Base opper Alloy (-		•	ogeneous Materials: a.g. pc boards, displa		JEDEC 97 Product Marki and/or Pkg. Labeling e1
		"Contained In"	% Iotal			14.64	(mg) Total	Mold Compound	% ot Total Weight	52.09
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		,			02.00
Silica Fused	60676-86-0	Mold Compound	48.183	13.539	481,833		Silica Fused	60676-86-0	92.50	
Epoxy Resin	Trade secret	Mold Compound	1.823	0.512	18,232		Epoxy Resin	Trade secret	3.50	
Phenol Resin	Trade secret	Mold Compound	1.823	0.512	18,232		Phenol Resin	Trade secret	3.50	
Carbon Black	1333-86-4	Mold Compound	0.260	0.073	2,605		Carbon Black	1333-86-4	0.50	
Polyimide	32197-39-0	Lead Frame	11.982	3.367	119,815			Total		
Copper (Cu)	7440-50-8	Lead Frame	6.881	1.934	68,812	6.02	(mg) Total	Lead Frame	% of Total Weight	21.43
_ ·			0.400		04.007					
Epoxy resins	Trade Secret	Lead Frame	2.139	0.601	21,387		Polyimide	32197-39-0	55.91	
Nickel	7440-02-0	Lead Frame	0.214	0.060	2,143		Copper (Cu)	7440-50-8	32.11	
Gold	7440-57-5	Lead Frame	0.214	0.060	2,143		Epoxy resins	Trade Secret	9.98	
Silica Fused	60676-86-0	Die Attach	0.224	0.063	2,244		Nickel	7440-02-0	1.00	
Epoxy Resin	Trade secret	Die Attach	0.255	0.072	2,550		Gold	7440-57-5	1.00	
Polymeric material	Proprietary	Die Attach	0.031	0.009	306			Total	100.00	-
Silicon	7440-21-3	Chip (Die)	6.000	1.686	60,000	0.14	(mg) Total	Die Attach	% of Total Weight	0.51
Doped Gold	7440-57-5	Wire Bond	1.920	0.540	19.200		Silica Fused	60676-86-0	44.00	
Tin	7440-31-5	Plating on external leads (pins)	17.238	4.844	172.378		Epoxy Resin	Trade secret	50.00	
Silver	7440-22-4	Plating on external leads (pins)	0.722	0.203	7.220		Polymeric material	Proprietary	6.00	
Copper	7440-50-8	Plating on external leads (pins)	0.090	0.025	903		1 olymono matorial	Total		1
Copper	/ ++0 00 0	TOT		28.100	1.000.000	1.69	(mg) Total		% of Total Weight	6
	0.0281 g Te		ALS: 100.000	20.100	1,000,000	1.69	Doped Silicon	Chip (Die) 7440-21-3	% of 10tal weight 100	0
pliance with the above EU Directives has been verified	via internal design controls, sup	lier declarations, and /or analytical test data.								
chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d		with which he are directly the second s				0.54	(mg) Total	Wire Bond	% of Total Weight	1.92
is not below the threshold of regulatory concern for an	locument, there is no credible rea ny regulatory scheme world-wide.	son to believe that the unavoidable impurity co				0.54	(mg) Total Doped Gold	Wire Bond 7440-57-5	% of Total Weight 100.00	1.92
ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemica	ny regulatory scheme world-wide. lammability standard for plastics.	son to believe that the unavoidable impurity co	oncentration of the	chemical sub		0.54			100.00	1.92
ding compounds used by Microchip meet the UL94 V0 f	ny regulatory scheme world-wide. lammability standard for plastics. als/plastics/	son to believe that the unavoidable impurity co . You can access the UL iQTM family of databas	encentration of the	e chemical sub t report at	ostance, if	0.54		7440-57-5	100.00	
ting compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	y regulatory scheme world-wide. lammability standard for plastics. als/plastics/ ped are made from polyvinyl chi on in this form concerning substa ist of its knowledge and belief, as has been compiled based on the rets and some information may n parts and the average weight of ar	son to believe that the unavoidable impurity co You can access the UL iQTM family of databas oride (PVC) plastic. "Window envelopes" used t nces restricted by RoHS in Microchip Technolo of the date listed in this form. Microchip Techno ranges provided in Material Safety Data Sheets ot have been provided by subcontract assembl incicipated significant toxic metals components.	oncentration of the ses to obtain a tes to hold the packin ogy Incorporated's nology Incorporated provided by raw 1 ers and raw mate	e chemical sub t report at g slip on the o semiconduct ed cannot gua naterial suppliers.	ostance, if outer box and or devices in rantee the iers. Supplier Information is		Doped Gold	7440-57-5 Total Plating on external	100.00	
ting compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec ided only as estimates of the average weight of these p	y regulatory scheme world-wide. lammability standard for plastics. ls/plastics/ pped are made from polyvinyl chlo on in this form concerning substa ist of its knowledge and belief, as has been compiled based on the rets and some information may n parts and the average weight of ar in silicon devices (silicon IC) in th varranty, express or implied, with	son to believe that the unavoidable impurity co You can access the UL iQTM family of databas oride (PVC) plastic. "Window envelopes" used to nces restricted by RoHS in Microchip Technolo of the date listed in this form. Microchip Technolo of the date listed in Material Safety Data Sheets ot have been provided by subcontract assembl nticipated significant toxic metals components. he finished parts. respect to the information provided in this dec	encentration of the ses to obtain a tes to hold the packin ngy Incorporated's nology Incorporate provided by raw i lers and raw mate These estimates	e chemical sub t report at g slip on the o semiconduct ed cannot gua naterial suppli rail suppliers. do not includo usive, limited	ostance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product		(mg) Total	7440-57-5 Total Plating on external leads (pins)	100.00 100.00 % of Total Weight	
ing compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. Drohip Technology Incorporated believes the informatio original packing materials is true and correct to the be oleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec ided only as estimates of the average weight of these p pants, metals, and non-metal materials contained with bechip Technology Incorporated does not provide any v anties provided by Microchip Technology Incorporated	y regulatory scheme world-wide. lammability standard for plastics. las/plastics/ oped are made from polyvinyl chlo en in this form concerning substat st of its knowledge and belief, as has been compiled based on the i rets and some information may n parts and the average weight of ar in silicon devices (silicon IC) in th varranty, express or implied, with I and its subsidiaries are containe changes to Material Content Decl he users' reliance on the informat	son to believe that the unavoidable impurity co You can access the UL iQTM family of database oride (PVC) plastic. "Window envelopes" used in nces restricted by RoHS in Microchip Technolo of the date listed in this form. Microchip Technolo of the date listed in this form. Microchip Technolo of the date listed in this form. Microchip Technolo of the date listed by RoHS in Microchip Technolo of the date listed by RoHS in Microchip Technolo of the date listed by RoHS in Microchip Technolo thave been provided by subcontract assemble thicipated significant toxic metals components. he finished parts. respect to the information provided in this dec ed in Microchip's standard terms and conditions arations and shall not be liable for any damage	oncentration of the ses to obtain a tes to hold the packin ogy Incorporated's ology Incorporated's provided by raw i lers and raw mate These estimates claration. The exclision s of sale. These ar s, direct or indirect	e chemical sub t report at g slip on the o semiconduct d cannot gua material suppliers. do not include usive, limited e provided in t, consequent	ostance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product Microchip's tial or		(mg) Total	7440-57-5 Total Plating on external leads (pins) 7440-31-5	100.00 100.00 % of Total Weight 95.50	

Silica Fused 60676-86-0 Mold Compound 48.183 1 Epoxy Resin Trade secret Mold Compound 1.823 Phenol Resin Trade secret Mold Compound 1.823 Carbon Black 1333-86-4 Mold Compound 0.260 Polyimide 32197-39-0 Lead Frame 11.982 Copper (Cu) 7440-50-8 Lead Frame 6.881 Epoxy resins Trade Secret Lead Frame 2.139 Nickel 7440-02-0 Lead Frame 0.214 Gold 7440-57-5 Lead Frame 0.214 Silica Fused 60676-86-0 Die Attach 0.2255 Polymeric material Proprietary Die Attach 0.255 Polymeric material Proprietary Die Attach 0.255 Doped Gold 7440-57-5 Wire Bond 1.920 Tin 7440-57-5 Plating on external leads (pins) 1.7238 Silver 7440-52-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 <	mg/part 16.286 0.616 0.016 0.088 4.050 2.326 0.072 0.072 0.072 0.076 0.086 0.010 2.028 2.028 0.649 5.826 0.244 0.031 33.800	ppm 481,833 18,232 18,232 2,605 119,815 68,812 21,387 2,143 2,244 2,550 306 60,000 19,200 172,378 7,220 903 1,000,000	17.61 7.24 0.17	(mg) Total Silica Fused Epoxy Resin Phenol Resin Carbon Black (mg) Total Polyimide Copper (Cu) Epoxy Resin Nickel Gold (mg) Total	Mold Compound 60676-86-0 Trade secret 1733-86-4 Total Lead Frame 32197-39-0 7440-50-8 Trade Secret 7440-57-5 Total Die Attach 60676-86-0 Trade secret Proprietary Total	% ot Total Weight 92.50 3.50 0.50 100.00 % of Total Weight 55.91 32.11 9.98 1.00 1.00 100.00 % of Total Weight 44.00 50.00 6.00	52.09 21.43 0.51
Bilica Fused 60676-86-0 Mold Compound 48.183 1 Epoxy Resin Trade secret Mold Compound 1.823 Phenol Resin Trade secret Mold Compound 1.823 Carbon Black 1333-86-4 Mold Compound 0.260 Polyimide 32197-39-0 Lead Frame 11.982 Copper (Cu) 7440-50-8 Lead Frame 6.881 Epoxy resins Trade Secret Lead Frame 0.214 Gold 7440-57-5 Lead Frame 0.214 Gold 7440-57-5 Lead Frame 0.214 Silica Fused 60676-86-0 Die Attach 0.225 Epoxy Resin Trade secret Die Attach 0.224 Silicon 7440-57-5 Wire Bond 1.920 Tin 7440-57-5 Wire Bond 1.920 Tin 7440-57-5 Plating on external leads (pins) 1.7238 Silver 7440-57-5 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (16.286 0.616 0.616 0.088 4.050 2.326 0.723 0.072 0.072 0.076 0.086 0.010 2.028 0.649 5.826 0.244 0.031	481,833 18,232 2,605 119,815 68,812 21,387 2,143 2,143 2,244 2,550 306 60,000 19,200 172,378 7,220 903	0.17	Epoxy Resin Phenol Resin Carton Black (mg) Total Copper (Cu) Epoxy resins Gold (mg) Total Silica Fused Epoxy Resin Polymeric material	Trade secret Trade secret 1333-86-4 Total 20197-39-0 7440-50-8 Trade Secret 7440-57-8 Total Die Attach 60676-86-0 Trade secret Proprietary	3.50 3.60 0.50 % of Total Weight 55.91 32.11 9.98 1.00 1.00 % of Total Weight 44.00 50.00 6.00	
Époxy Resin Trade secret Mold Compound 1.823 Phenol Resin Trade secret Mold Compound 1.823 Carbon Black 1333-86-4 Mold Compound 0.260 Polyimide 32197-39-0 Lead Frame 11.982 Copper (Cu) 7440-50-8 Lead Frame 6.881 Epoxy resins Trade Secret Lead Frame 0.214 Gold 7440-02-0 Lead Frame 0.214 Gold 7440-57-5 Lead Frame 0.214 Silica Fused 60676-86-0 Die Attach 0.225 Epoxy Resin Trade secret Die Attach 0.255 Polymeric material Proprietary Die Attach 0.255 Polymeric material Proprietary Die Attach 0.255 Tin 7440-57-5 Wire Bond 1.920 Tin 7440-57-5 Plating on external leads (pins) 0.722 Silver 7440-57-8 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pin	0.616 0.616 0.088 4.050 2.326 0.723 0.072 0.072 0.076 0.086 0.010 2.028 0.649 5.826 0.244 0.031	18,232 18,232 2,605 119,815 68,812 21,337 2,143 2,244 2,550 306 60,000 19,200 172,378 7,220 903	0.17	Epoxy Resin Phenol Resin Carton Black (mg) Total Copper (Cu) Epoxy resins Gold (mg) Total Silica Fused Epoxy Resin Polymeric material	Trade secret Trade secret 1333-86-4 Total 20197-39-0 7440-50-8 Trade Secret 7440-57-8 Total Die Attach 60676-86-0 Trade secret Proprietary	3.50 3.60 0.50 % of Total Weight 55.91 32.11 9.98 1.00 1.00 % of Total Weight 44.00 50.00 6.00	
Phenol Resin Trade secret Mold Compound 1.823 Carbon Black 1333-86-4 Mold Compound 0.260 Polyimide 32197-39-0 Lead Frame 11.982 Copper (Cu) 7440-50-8 Lead Frame 6.881 Epoxy resins Trade Secret Lead Frame 2.139 Nickel 7440-02-0 Lead Frame 0.214 Gold 7440-67-5 Lead Frame 0.214 Gold 7440-67-5 Lead Frame 0.224 Epoxy Resin Trade secret Die Attach 0.225 Polymeric material Proprietary Die Attach 0.255 Polymeric material Proprietary Die Attach 0.255 Silicon 7440-21-3 Chip (Die) 6.000 Doped Gold 7440-27-5 Wire Bond 1.920 Tin 7440-22-4 Plating on external leads (pins) 17.238 Silver 7440-22-4 Plating on external leads (pins) 0.722 Copper 7440-22-4 Plating on external leads (pins)	0.616 0.088 4.050 2.326 0.723 0.072 0.072 0.076 0.086 0.010 2.028 0.649 5.826 0.244 0.031	18,232 2,605 119,815 68,812 21,387 2,143 2,143 2,244 2,550 306 60,000 19,200 172,378 7,220 903	0.17	Phenol Resin Carbon Black (mg) Total Polyimide Copper (Cu) Epoxy resins Nickel Gold (mg) Total Silica Fused Epoxy Resin Polymeric material	Trade secret 1333-86-4 Total Lead Frame 32197-39-0 7440-50-8 Trade Secret 7440-57-5 Total Die Attach 60676-88-0 Trade secret Proprietary	3.50 0.50 100.00 % of Total Weight 3.2.11 9.98 1.00 1.00 % of Total Weight 44.00 50.00 6.00	
Carbon Black 1333-86-4 Mold Compound 0.260 Polyimide 32197-39-0 Lead Frame 11.982 Copper (Cu) 7440-50-8 Lead Frame 6.881 Epoxy resins Trade Secret Lead Frame 2.139 Nickel 7440-02-0 Lead Frame 0.214 Gold 7440-57-5 Lead Frame 0.214 Silica Fused 60676-86-0 Die Attach 0.224 Epoxy Resin Trade secret Die Attach 0.255 Polymeric material Proprietary Die Attach 0.255 Doped Gold 7440-57-5 Wire Bond 1.920 Tin 7440-57-5 Wire Bond 1.920 Tin 7440-57-5 Wire Bond 1.920 Tin 7440-57-5 Plating on external leads (pins) 0.722 Silver 7440-52-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.722 Output 7440-50-8 Plating on external leads (pins)	0.088 4.050 2.326 0.723 0.072 0.072 0.076 0.086 0.010 2.028 0.649 5.826 0.244 0.031	2,605 119,815 68,812 21,387 2,143 2,244 2,550 306 60,000 19,200 172,378 7,220 903	0.17	Carbon Black (mg) Total Polyimide Copper (Cu) Epoxy resins (mg) Total Gold (mg) Total Silica Fused Epoxy Resin Polymeric material	1333-86-4 Total Lead Frame 32197-39-0 7440-50-8 Trade Secret 7440-02-0 7440-02-0 Total Die Attach 60676-86-0 Trade secret Proprietary	0.50 100.00 % of Total Weight 55.91 32.11 9.98 1.00 1.00 100.00 % of Total Weight 44.00 50.00 6.00	
Copper (Cu) 7440-50-8 Lead Frame 6.881 Epoxy resins Trade Secret Lead Frame 2.139 Nickel 7440-02-0 Lead Frame 0.214 Gold 7440-67-5 Lead Frame 0.214 Gold 7440-67-5 Lead Frame 0.214 Silica Fused 60676-86-0 Die Attach 0.224 Epoxy Resin Trade secret Die Attach 0.255 Polymeric material Proprietary Die Attach 0.031 Silicon 7440-21-3 Chip (Die) 6.000 Doped Gold 7440-27-5 Wire Bond 1.920 Tin 7440-31-5 Plating on external leads (pins) 17.238 Silver 7440-22-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.723 OL0338 g Total Mass 0.0338 g Total Mass 100.000 3	2.326 0.723 0.072 0.072 0.076 0.086 0.010 2.028 0.649 5.826 0.244 0.031	68,812 21,387 2,143 2,143 2,244 2,550 306 60,000 19,200 172,378 7,220 903	0.17	Polyimide Copper (Cu) Epxy resins Gold (mg) Total Silica Fused Epxy Resin Polymeric material	Lead Frame 32197-39-0 7440-50-8 Trade Secret 7440-02-0 7440-57-5 Total Die Attach 60676-86-0 Trade Secret Proprietary	% of Total Weight 55.91 32.11 39.88 1.00 1.00 100.00 % of Total Weight 44.00 44.00 50.00 6.00 6.00	
Epoxy resins Trade Secret Lead Frame 2.139 Nickel 7440-02-0 Lead Frame 0.214 Gold 7440-057-5 Lead Frame 0.214 Silica Fused 60676-86-0 Die Attach 0.224 Epoxy Resin Trade secret Die Attach 0.255 Polymeric material Proprietary Die Attach 0.255 Doped Gold 7440-27-3 Chip (Die) 6.000 Doped Gold 7440-27-5 Wire Bond 1.920 Tin 7440-27-4 Plating on external leads (pins) 17.238 Silver 7440-22-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.792 Copper 7440-50-8 Plating on external leads (pins) 0.090 TOTALS: 100.000 3 0.0338 g Total Mass O.0300 3 3 3 3	0.723 0.072 0.072 0.076 0.086 0.010 2.028 0.649 5.826 0.244 0.031	21,387 2,143 2,143 2,244 2,550 306 60,000 19,200 172,378 7,220 903	0.17	Polyimide Copper (Cu) Epxy resins Gold (mg) Total Silica Fused Epxy Resin Polymeric material	32197-39-0 7440-50-8 Trade Secret 7440-02-0 7440-57-5 Total Die Attach 60676-86-0 Trade secret Proprietary	55.91 32.11 9.98 1.00 1.00 100.00 % of Total Weight 44.00 50.00 6.00	
Epoxy resins Trade Secret Lead Frame 2.139 Nickel 7440-02-0 Lead Frame 0.214 Gold 7440-05-5 Lead Frame 0.214 Silica Fused 60676-86-0 Die Attach 0.224 Epoxy Resin Trade secret Die Attach 0.255 Polymeric material Proprietary Die Attach 0.255 Doped Gold 7440-27-3 Chip (Die) 6.000 Doped Gold 7440-27-5 Wire Bond 1.920 Tin 7440-27-5 Plating on external leads (pins) 17.228 Silver 7440-22-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.090 TOTALS: 100.000 3 0.0338 g Total Mass O.0338 g Total Mass Nics/EU (RoHS Recast Directive receive 2002/95/EC (RoH-of-Life Vehicles (ELV) Directive). 3	0.072 0.072 0.076 0.086 0.010 2.028 0.649 5.826 0.244 0.031	21,387 2,143 2,143 2,244 2,550 306 60,000 19,200 172,378 7,220 903	0.17	Polyimide Copper (Cu) Epxy resins Gold (mg) Total Silica Fused Epxy Resin Polymeric material	32197-39-0 7440-50-8 Trade Secret 7440-02-0 7440-57-5 Total Die Attach 60676-86-0 Trade secret Proprietary	55.91 32.11 9.98 1.00 1.00 100.00 % of Total Weight 44.00 50.00 6.00	
Nickel 7440-02-0 Lead Frame 0.214 Gold 7440-57-5 Lead Frame 0.214 Silica Fused 6067-86-0 Die Attach 0.224 Epoxy Resin Trade secret Die Attach 0.225 Polymeric material Proprietary Die Attach 0.031 Silicon 7440-57-5 Wire Bond 6.000 Silicon 7440-21-3 Chip (Die) 6.000 Doped Gold 7440-57-5 Wire Bond 1.920 Tin 7440-52-4 Plating on external leads (pins) 17.238 Silver 7440-52-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.090 TOTALS: 100.000 3 3 0.090 3 O.0338 g	0.072 0.072 0.076 0.086 0.010 2.028 0.649 5.826 0.244 0.031	2,143 2,143 2,244 2,550 306 60,000 19,200 172,378 7,220 903		Copper (Cu) Epoxy resins Nickel Gold (mg) Total Silica Fused Epoxy Resin Polymeric material	7440-50-8 Trade Secret 7440-02-0 7440-57-5 Total Die Attach 60676-86-0 Trade secret Proprietary	32.11 9.98 1.00 100.00 % of Total Weight 44.00 50.00 6.00	0.51
Gold 7440-57-5 Lead Frame 0.214 Silica Fused 60676-86-0 Die Attach 0.224 Epoxy Resin Trade secret Die Attach 0.255 Polymeric material Proprietary Die Attach 0.031 Silicon 7440-21-3 Chip (Die) 6.000 Doped Gold 7440-57-5 Wire Bond 1.920 Tin 7440-22-4 Plating on external leads (pins) 17.238 Silver 7440-22-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.090 Copper 7440-50-8 Plating on external leads (pins) 0.090 TOTALS: 100.000 3 Silver 7440-50-8 Plating on external leads (pins) 0.090 3 3 3 3 O.0338 g Total Mass 0.0338 g Total Mass 3 3 3	0.072 0.076 0.086 0.010 2.028 0.649 5.826 0.244 0.031	2,143 2,244 2,550 306 60,000 19,200 172,378 7,220 903		Epoxy resins Nickel Gold (mg) Total Silica Fused Epoxy Resin Polymeric material	Trade Secret 7440-02-0 7440-57-5 Total Die Attach 60676-86-0 Trade secret Proprietary	9.98 1.00 1.00 100.00 % of Total Weight 44.00 50.00 6.00	0.51
Silica Fused 60676-86-0 Die Attach 0.224 Epoxy Resin Trade secret Die Attach 0.235 Polymeric material Proprietary Die Attach 0.031 Silicon 7440-21-3 Chip (Die) 6.000 Doped Gold 7440-27-3 Wire Bond 1.920 Tin 7440-27-5 Wire Bond 1.920 Silver 7440-27-4 Plating on external leads (pins) 1.7.238 Silver 7440-27-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.0300 TOTALS: 0.0338 g Total Mass 0.0338 g Total Mass 100.000 3	0.076 0.086 0.010 2.028 0.649 5.826 0.244 0.031	2,244 2,550 306 60,000 19,200 172,378 7,220 903		Nickel Gold (mg) Total Silica Fused Epoxy Resin Polymeric material	7440-02-0 7440-57-5 Total Die Attach 60676-86-0 Trade secret Proprietary	1.00 1.00 100.00 % of Total Weight 44.00 50.00 6.00	0.51
Epoxy Resin Trade secret Die Attach 0.255 Polymeric material Proprietary Die Attach 0.031 Silicon 7440-21-3 Chip (Die) 6.000 Doped Gold 7440-57-5 Wire Bond 1.920 Tin 7440-31-5 Plating on external leads (pins) 17.238 Silver 7440-22-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.090 TOTALS: 100.000 3 3 3 O.0338 g Total Mass 0.0338 100.000 3 3 sis semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). 3	0.010 2.028 0.649 5.826 0.244 0.031	2,550 306 60,000 19,200 172,378 7,220 903		(mg) Total Silica Fused Epoxy Resin Polymeric material	Total Die Attach 60676-86-0 Trade secret Proprietary	100.00 % of Total Weight 44.00 50.00 6.00	0.51
Polymeric material Proprietary Die Attach 0.031 Silicon 7440-21-3 Chip (Die) 6.000 Doped Gold 7440-57-5 Wire Bond 1.920 Tin 7440-31-5 Plating on external leads (pins) 17.238 Silver 7440-22-4 Plating on external leads (pins) 0.722 Copper 7440-20-8 Plating on external leads (pins) 0.000 Copper 7440-50-8 Plating on external leads (pins) 0.000 Copper 7440-22-4 Plating on external leads (pins) 0.000 70000 Copper 7440-22-60-8 Plating on external leads (pins) 0.000 700000 700000 700000 700000 700000	0.010 2.028 0.649 5.826 0.244 0.031	306 60,000 19,200 172,378 7,220 903		Silica Fused Epoxy Resin Polymeric material	Die Attach 60676-86-0 Trade secret Proprietary	% of Total Weight 44.00 50.00 6.00	0.51
Doped Gold 7440-57-5 Wire Bond 1.920 Tin 7440-31-5 Plating on external leads (pins) 17.238 Silver 7440-22-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.090 Copper 7440-50-8 Plating on external leads (pins) 0.090 TOTALS: 100.000 3 0.0338 g Total Mass Total Mass 100.000 3 is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). 10	0.649 5.826 0.244 0.031	19,200 172,378 7,220 903		Silica Fused Epoxy Resin Polymeric material	60676-86-0 Trade secret Proprietary	44.00 50.00 6.00	0.51
Tin 7440-31-5 Plating on external leads (pins) 17.238 Silver 7440-22-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.090 TOTALS: 100.000 Copper 0.0338 g Total Mass Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	5.826 0.244 0.031	172,378 7,220 903	2.03	Silica Fused Epoxy Resin Polymeric material	Trade secret Proprietary	50.00 6.00	
Silver 7440-22-4 Plating on external leads (pins) 0.722 Copper 7440-50-8 Plating on external leads (pins) 0.090 TOTALS: 100.000 0.0338 g Total Mass is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.244 0.031	7,220 903	2.03	Polymeric material	Proprietary	6.00	1
Copper 7440-50-8 Plating on external leads (pins) 0.090 TOTALS: 100.000 0.0338 g Total Mass is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.031	903	2.03				
TOTALS: 100.000 3 0.0338 g Total Mass is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			2.03	(mg) Total	Total		1
0.0338 g Total Mass is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	33.800	1,000,000	2.03	(mg) Total		100.00	
is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).					Chip (Die)	% of Total Weight	6
is semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).				Doped Silicon	7440-21-3	100	
chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Mic	icrochin Te	chology	0.65	(mg) Total	Wire Bond	% of Total Weight	1.92
s originate a basent how the hast above, the creating a basent is not a memory and the semiconductor territe and, to the best of mic corporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the cher y, is not below the threshold of regulatory concern for any regulatory scheme world-wide.				Doped Gold	7440-57-5	100.00	
olding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test rep tp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/	•				Total	100.00	
te protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip Intain "reels" may be made from PVC plastic.	lip on the o	outer box and	6.10	(mg) Total	Plating on external leads (pins)	% of Total Weight	18.05
crochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's sem eir original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's mpleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw mater formation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material so ovided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do ne dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.	annot guar erial supplie suppliers. I	antee the ers. Supplier Information is		Tin	7440-31-5	95.50	
crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive arranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are pro totations, sales order acknowledgement, and invoices.				Silver	7440-22-4	4.00	
crochip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, co nerwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party this Certificate of Compliance for semiconductor products.				Copper	7440-50-8	0.50	

Semiconductor Device 1	Гуре: 25 VFBGA 3x3x0.8r	nm (FE)		ination Base opper Alloy (geneous Materials: I. pc boards, display	s)	JEDEC 97 Product Markin and/or Pkg. Labeling e1
		"Contained In"	% I otal			7.50	(m, m) T = 4 = 1	Mold Compound	% ot Total Weight	40.075
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	7.50	(mg) Total	•	·	46.875
fused silica	60676-86-0	Mold Compound	35.442	5.671	354,422		fused silica	60676-86-0	75.61	
solid epoxy resin	25068-38-6	Mold Compound	5.030	0.805	50,297		solid epoxy resin	25068-38-6	10.73	
phenol resin Cristalline Silica	108-95-2 112945-52-5	Mold Compound Mold Compound	5.030	0.805	50,297 11,438		phenol resin Cristalline Silica	108-95-2 112945-52-5	10.73	
carbon black	1333-86-4	Mold Compound	0.230	0.037	2.297		carbon black	1333-86-4	0.49	
Copper	7440-50-8	Lead Frame	10.321	1.651	103,213		Garborr black	Tota		
Glass fibers	65997-17-3	Lead Frame	6.153	0.984	61,525	4.60	(mg) Total	Lead Frame	% of Total Weight	28.75
Phenol polymer	9003-36-5	Lead Frame	6.153	0.984	61,525			7440 50 0	05.00	
Silica, chemically prepared	7631-86-9	Lead Frame	2.300	0.368	23,000		Copper Glass fibers	7440-50-8 65997-17-3	35.90 21.40	
Nickel	7440-02-0	Lead Frame	1.121	0.308	11,213		Phenol polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.719	0.179	7,188		Silica, chemically prepared	7631-86-9	21.40	
Magnesium silicate	14807-96-6	Lead Frame	0.575	0.092	5,750		Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.575	0.092	5,750		Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.230	0.037	2,300		Magnesium silicate	14807-96-6	2.00	
Misc.	system	Lead Frame	0.431	0.069	4,313		Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.144	0.023	1,438	(2-Me	thoxymethylethoxy)propanol	34590-94-8	0.80	
Gold	7440-57-5	Lead Frame	0.029	0.005	288		Misc.	system	1.50	
Silver (Ag)	7440-22-4	Die Attach	0.905	0.145	9,050		Aluminium-hydroxide-oxide	24623-77-6	0.50	
Diester Resin	Trade Secret	Die Attach	0.226	0.036	2,263		Gold	7440-57-5	0.10	
Acrlate Resin	Trade Secret	Die Attach	0.085	0.014	849			Tota	100.00	
Polymeric Resin	Trade Secret	Die Attach	0.034	0.005	339	0.20	(mg) Total	Die Attach	% of Total Weight	1.25
Silicon	7440-21-3	Chip (Die)	5.000	0.800	50,000		Silver (Ag)	7440-22-4	72.40	
Doped Gold	7440-57-5	Wire Bond	0.625	0.100	6,250		Diester Resin	Trade Secret	18.10	
Tin	7440-31-5	SAC 305 Solder ball	16.888	2.702	168,875		Acrlate Resin	Trade Secret	6.79	
Silver	7440-22-4	SAC 305 Solder ball	0.525	0.084	5,250		Polymeric Resin	Trade Secret	2.71	
Copper	7440-50-8	SAC 305 Solder ball	0.088	0.014	875			Tota		
									T	
		то	ALS: 100.000	16.000	1,000,000	0.80	(mg) Total	Chip (Die)	% of Total Weight	5
	0.0160 g Tota	al Mass	100.000		1,000,000	0.80	(mg) Total Doped Silicon	7440-21-3	% of Total Weight	5
semiconductor device and its homogenous materials com ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	5	al Mass	100.000		1,000,000	0.80	,	,	% of Total Weight	5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	nply with EU Directive 2002/95/EC	al Mass ; (RoHS Directive), EU Directive 2011/65/EL	100.000		1,000,000	0.80	,	7440-21-3	% of Total Weight	5 0.625
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the chem rporated's knowledge and belief as of the date of this docu is not below the threshold of regulatory concern for any re	nply with EU Directive 2002/95/EC internal design controls, supplie nical substance is NOT an intenti ument, there is no credible reaso agulatory scheme world-wide.	al Mass C (RoHS Directive), EU Directive 2011/65/EL er declarations, and /or analytical test data. onal ingredient in the semiconductor devic n to believe that the unavoidable impurity o	(RoHS Recast Dire e and, to the best o oncentration of the	ctive) and wit f Microchip Te chemical sub	1,000,000 h EU echnology		Doped Silicon	7440-21-3 Tota Wire Bond 7440-57-5	% of Total Weight 100 1 4 0 7 0 1 0 1 0 1	-
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the chem porated's knowledge and belief as of the date of this docu is not below the threshold of regulatory concern for any re ling compounds used by Microchip meet the UL94 V0 flam	nply with EU Directive 2002/95/EC internal design controls, supplie nical substance is NOT an intenti ument, there is no credible reaso egulatory scheme world-wide. imability standard for plastics. Yi	al Mass C (RoHS Directive), EU Directive 2011/65/EL er declarations, and /or analytical test data. onal ingredient in the semiconductor devic n to believe that the unavoidable impurity o	(RoHS Recast Dire e and, to the best o oncentration of the	ctive) and wit f Microchip Te chemical sub	1,000,000 h EU echnology		Doped Silicon (mg) Total	7440-21-3 Tota Wire Bond	% of Total Weight 100 1 4 0 7 0 1 100.00 100.00	-
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chem rporated's knowledge and belief as of the date of this docu is not below the threshold of regulatory concern for any re ding compounds used by Microchip meet the UL94 V0 flam //ul.com/global/eng/pages/offerings/industries/chemicals/p protective "tubes" in which the specific product is shipped	nply with EU Directive 2002/95/EC internal design controls, supplie nical substance is NOT an intenti ument, there is no credible reaso egulatory scheme world-wide. umability standard for plastics. Yo plastics/	al Mass (RoHS Directive), EU Directive 2011/65/EU er declarations, and /or analytical test data. onal ingredient in the semiconductor devic n to believe that the unavoidable impurity of ou can access the UL iQTM family of datab	(RoHS Recast Dire e and, to the best o oncentration of the	ctive) and wit f Microchip Te chemical sub t report at	1,000,000 h EU schnology sstance, if		Doped Silicon (mg) Total	7440-21-3 Tota Wire Bond 7440-57-5	% of Total Weight 100 1 4 0 7 0 1 0 1 0 1	
	nply with EU Directive 2002/95/EC internal design controls, supplied incal substance is NOT an intenti iment, there is no credible reaso egulatory scheme world-wide. Imability standard for plastics. Ye lastics/ d are made from polyvinyl chlorid in this form concerning substance of its knowledge and belief, as of been compiled based on the rar is and some information may not s and the average weight of antit	al Mass C (RoHS Directive), EU Directive 2011/65/EU ar declarations, and /or analytical test data. conal ingredient in the semiconductor device in to believe that the unavoidable impurity of bou can access the UL iQTM family of datab de (PVC) plastic. "Window envelopes" used es restricted by RoHS in Microchip Techno the date listed in this form. Microchip Techno the date listed in the	(RoHS Recast Dire a and, to the best o oncentration of the uses to obtain a tes to hold the packin cogy Incorporated's nology Incorporated's provided by raw n lers and raw mate	ctive) and wit f Microchip Te chemical sub t report at g slip on the c semiconduct d cannot guan naterial suppliers.	1,000,000 h EU schnology stance, if outer box and or devices in rantee the iers. Supplier Information is	0.10	(mg) Total	7440-21-3 Tota Wire Bond 7440-57-5 Tota	% of Total Weight 100 1 00.00 % of Total Weight 100.00 1 100.00 1 100.00	0.625
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified via themical substance is absent from the list above, the chem rporated's knowledge and belief as of the date of this docu- is not below the threshold of regulatory concern for any re ding compounds used by Microchip meet the UL94 V0 flam <i>(U.I.com/global/eng/pages/offerings/industries/chemicals/p</i> protective "tubes" in which the specific product is shipped ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in original packing materials is true and correct to the best o pleteness and accuracy of data in this form because it has mation is often protected from disclosure as trade secrets ided only as estimates of the average weight of these parts	ply with EU Directive 2002/95/EC internal design controls, supplied incal substance is NOT an intenti iment, there is no credible reaso egulatory scheme world-wide. Imability standard for plastics. Yo lastics/ d are made from polyvinyl chloried this form concerning substance of its knowledge and belief, as of been compiled based on the rar and some information may not s and the average weight of antii sillicon devices (sillicon IC) in the anty, express or implied, with re	al Mass C (RoHS Directive), EU Directive 2011/65/EU ar declarations, and /or analytical test data. conal ingredient in the semiconductor device in to believe that the unavoidable impurity of ou can access the UL iQTM family of datab de (PVC) plastic. "Window envelopes" used as restricted by RoHS in Microchip Techno the date listed in this form. Microchip Techno the date listed in the date listed listed in the date listed in the date	(RoHS Recast Dire e and, to the best o oncentration of the uses to obtain a tes to hold the packin ogg Incorporated's nology Incorporated's nology Incorporated's . These estimates claration. The excli	ctive) and wit f Microchip Te c chemical sub t report at g slip on the c semiconduct d cannot guan naterial suppi fal suppilers. do not include usive, limited	1,000,000 h EU echnology stance, if outer box and or devices in rantee the iers. Supplier Information is t trace levels product	0.10	(mg) Total (mg) Total (mg) Total	7440-21-3 Tota Wire Bond 7440-57-5 Tota SAC 305 Solder ball	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00 100.00 100.00 % of Total Weight	0.625
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the chem porated's knowledge and belief as of the date of this docu is not below the threshold of regulatory concern for any re ing compounds used by Microchip meet the UL94 V0 flam //ul.com/global/eng/pages/offerings/industries/chemicals/p protective "tubes" in which the specific product is shipped in "reels" may be made from PVC plastic.	ply with EU Directive 2002/95/EC internal design controls, suppli- nical substance is NOT an intenti ament, there is no credible reaso gulatory scheme world-wide. Imability standard for plastics. Ye plastics/ d are made from polyvinyl chlorio in this form concerning substance of its knowledge and belief, as of been compiled based on the rar and some information may not s and the average weight of anti- silicon devices (silicon IC) in the "anty, express or implied, with re d its subsidiaries are contained i nges to Material Content Declara	al Mass C (RoHS Directive), EU Directive 2011/65/EU ar declarations, and /or analytical test data. conal ingredient in the semiconductor device in to believe that the unavoidable impurity of ou can access the UL iQTM family of datab de (PVC) plastic. "Window envelopes" used as restricted by RoHS in Microchip Techno the date listed in this form. Microchip Techno the tave been provided by subcontract assem cipated significant toxic metals component finished parts. spect to the information provided in this de n Microchip's standard terms and conditio tions and shall not be liable for any damage	(RoHS Recast Dire e and, to the best o oncentration of the uses to obtain a tes to hold the packin ology Incorporated's nology Incorporated s provided by raw i Jers and raw mate s. These estimates claration. The exclu- ts of sale. These ar	ctive) and wit f Microchip Te c chemical sub t report at g slip on the c semiconduct d cannot guan naterial suppliers. do not include usive, limited e provided in t, consequent	1,000,000 h EU echnology stance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product Microchip's tial or	0.10	(mg) Total (mg) Total (mg) Total Tin	7440-21-3 Tota Wire Bond 7440-57-5 Tota SAC 305 Solder ball 7440-31-5	% of Total Weight 100 100.00 % of Total Weight 100.00 % of Total Weight 96.50	0.625

fused silica 6 solid epoxy resin 2 phenol resin 7 Metal Hudroxide 1 Carbon black 7 Copper 7 Glass fibers 6 Phenol, formaldehyde, (chloromethyl)oxirane polymer 7	CAS Number 60676-86-0 25068-38-6 108-95-2 14808-60-7 1333-86-4 7440-50-8 65997-17-3 9003-36-5	"Contained In" Sub-Component Mold Compound / Halogen-Free Substrate + Solder Mask (AUS308)Halogen-Free	% Total Weight 47.464 3.909 3.630 0.558 0.279	mg/part 91.321 7.521	ppm 474,640	107.44	(mg) Total	Mold Compound / Halogen-Free	% ot Total	e1
fused silica 6 solid epoxy resin 2 phenol resin 7 Metal Hudroxide 1 Carbon black 7 Copper 7 Glass fibers 6 Phenol, formaldehyde, (chloromethyl)oxirane polymer 7	60676-86-0 25068-38-6 108-95-2 14808-60-7 1333-86-4 7440-50-8 65997-17-3	Mold Compound / Halogen-Free Mold Compound / Halogen-Free Mold Compound / Halogen-Free Mold Compound / Halogen-Free Mold Compound / Halogen-Free	47.464 3.909 3.630 0.558 0.279	91.321 7.521		-	(5)			55.84
Solid epoxy resin 2 phenol resin 2 Metal Hudroxide 1 Carbon black 2 Copper 2 Glass fibers 6 Phenol, formaldehyde, (chloromethyl)oxirane polymer 2	25068-38-6 108-95-2 14808-60-7 1333-86-4 7440-50-8 65997-17-3	Mold Compound / Halogen-Free Mold Compound / Halogen-Free Mold Compound / Halogen-Free Mold Compound / Halogen-Free	3.909 3.630 0.558 0.279	7.521			(Weight	1
phenol resin Metal Hudroxide Carbon black Copper Glass fibers Phenol, formaldehyde, (chloromethyl)oxirane polymer	108-95-2 14808-60-7 1333-86-4 7440-50-8 65997-17-3	Mold Compound / Halogen-Free Mold Compound / Halogen-Free Mold Compound / Halogen-Free	3.630 0.558 0.279		39.088		fused silica solid epoxy resin	60676-86-0 25068-38-6	85.00 7.00	1
Metal Hudroxide 1 Carbon black Copper Glass fibers Phenol, formaldehyde, (chloromethyl)oxirane polymer	14808-60-7 1333-86-4 7440-50-8 65997-17-3	Mold Compound / Halogen-Free Mold Compound / Halogen-Free	0.558 0.279	6.983	36,296		phenol resin	108-95-2	6.50	1
Copper Glass fibers 6 Phenol, formaldehyde, (chloromethyl)oxirane polymer	7440-50-8 65997-17-3			1.074	5,584		Metal Hudroxide	14808-60-7	1.00	
Glass fibers 6 Phenol, formaldehyde, (chloromethyl)oxirane polymer	65997-17-3	Substrate + Solder Mask (AUS308)Halogen-Free		0.537	2,792		Carbon black	1333-86-4	0.50	
Phenol, formaldehyde, (chloromethyl)oxirane polymer			7.762	14.933	77,616			Total	100.00	
	9003-36-5	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46,267	41.60	(mg) Total	Substrate + Solder Mask (AUS308) Halogen-Free	% of Total Weight	21.62
Silica, chemically prepared		Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46,267		Copper	7440-50-8	35.90	
	7631-86-9	Substrate + Solder Mask (AUS308)Halogen-Free	1.730	3.328	17,296		Glass fibers	65997-17-3	21.40	
							Phenol, formaldehyde,			
	7440-02-0	Substrate + Solder Mask (AUS308)Halogen-Free	0.843	1.622	8,432		(chloromethyl)oxirane polymer	9003-36-5	21.40	1
	7727-43-7 14807-96-6	Substrate + Solder Mask (AUS308)Halogen-Free Substrate + Solder Mask (AUS308)Halogen-Free	0.541	1.040 0.832	5,405 4,324		Silica, chemically prepared Nickel	7631-86-9 7440-02-0	8.00 3.90	1
	25068-38-6	Substrate + Solder Mask (AUS306)Halogen-Free	0.432	0.832	4,324		Barite	7440-02-0 7727-43-7	2.50	1
	34590-94-8	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.333	1,730		Magnesium silicate	14807-96-6	2.00	i i
Misc.	system	Substrate + Solder Mask (AUS308)Halogen-Free	0.324	0.624	3,243		Araldite GY 250	25068-38-6	2.00	i i
Aluminium-hydroxide-oxide 2	24623-77-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.108	0.208	1,081		(2-Methoxymethylethoxy)propanol	34590-94-8	0.80	i i
	7440-57-5	Substrate + Solder Mask (AUS308)Halogen-Free	0.022	0.042	216		Misc.	system	1.50	i i
	7440-22-4	Die Attach	0.550	1.059	5,502		Aluminium-hydroxide-oxide	24623-77-6	0.50	
	Trade Secret	Die Attach	0.138	0.265	1,376		Gold	7440-57-5	0.10	i
Acrlate Resin T	Trade Secret	Die Attach	0.052	0.099	516			Total	100.00	
Polymeric Resin T	Trade Secret	Die Attach	0.021	0.040	206	1.46	(mg) Total	Die Attach	% of Total Weight	0.76
	7440-21-3	Chip (Die)	7.940	15.277	79,400		Silver (Ag)	7440-22-4	72	1
	7440-31-5	Solder Ball (SAC405)	12.224	23.519	122,240		Diester Resin	Trade Secret	18	
	7440-22-4	Solder Ball (SAC405)	0.512	0.985	5,120		Acrlate Resin	Trade Secret	7	
Copper (Cu)	7440-50-8	Solder Ball (SAC405)	0.064	0.123	640		Polymeric Resin	Trade Secret	3	
Gold (Au)	7440-57-5	Bond Wire	1.030	1.981	10,296.00			Total	100.00	
Palladium (Pd)	7440-05-3	Bond Wire	0.010	0.020	104.00	15.28	Total (mg)	Chip (Die)	% of Total Weight	7.94
		TOTALS:	: 100.000	192.400	1,000,000		For reporting purposes, silicon integrated circuit presumed to be all silicon	7440-21-3	100	
	0.1924	g Total Mass						Total	100.00	
is semiconductor device and its homogenous materials comply with El ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	EU Directive 200	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast	Directive) and	d with EU	24.63	(mg) Total	Solder Ball (SAC405)	% of Total Weight	12.80
mpliance with the above EU Directives has been verified via internal de	design controls	, supplier declarations, and /or analytical test data.					Tin (Sn)	7440-31-5	95.50	
a chemical substance is absent from the list above, the chemical substa chnology Incorporated's knowledge and belief as of the date of this doo emical substance, if any, is not below the threshold of regulatory conce	ocument, there	is no credible reason to believe that the unavoidable					Silver (Ag)			
olding compounds used by Microchip meet the UL94 V0 flammability sta		-	ses to obtain a	test report at	t		Copper (Cu)	7440-22-4	4.00	
tp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ ne protective "tubes" in which the specific product is shipped are made x and certain "reels" may be made from PVC plastic.	le from polyviny	rl chloride (PVC) plastic. "Window envelopes" used t	to hold the pac	king slip on t	he outer			Total	0.50 100.00	I
crochip Technology Incorporated believes the information in this form of vices in their original packing materials is true and correct to the best of vices in their original packing materials is true and correct to the best of vices in their original packing materials is true and correct to the best of vices in their original packing materials is true and correct to the best of vices in their original packing materials is true and correct to the best of vices in their original packing materials is true and correct to the best of vices in their original packing materials is true and correct to the best of vices in their original packing materials is true and correct to the best of vices in the vices										
rantee the completeness and accuracy of data in this form because it terial suppliers. Supplier information is often protected from disclosure material suppliers. Information is provided only as estimates of the av- se estimates do not include trace levels of dopants, metals, and non-r	ire as trade sec average weight	rets and some information may not have been provid of these parts and the average weight of anticipated	ded by subcon I significant to	tract assemb	lers and	2.00	(mg) Total	Bond Wire	% of Total Weight	1.04
crochip Technology Incorporated does not provide any warranty, expre duct warranties provided by Microchip Technology Incorporated and i vicrochip's quotations, sales order acknowledgement, and invoices.							Gold (Au)	7440-57-5	99.0000	
crochip disclaims any duty to notify users of updates or changes to Ma nerwise, suffered by users or third parties as a result of the users' relia GS) or of this Certificate of Compliance for semiconductor products.							Palladium (Pd)	7440-05-3	1.0000	

			P	attern (Grapi	hic)			ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Produ Marking and/or Pkg. Labeling e1
Semiconductor Dev	ice Type: 04 CSP (AF)			••						ei
		"Contained In"	% I otal				4 1 - 1 - 1			
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.06	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.035	41,528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.013	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.013	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.001	956		Carbon Black	Proprietary	1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.010	12,300			Total		
Copper	7440-50-8	Under Bump Metal	0.212	0.002	2,120	0.01	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.001	774		Organosilicate polymer	Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.000	421			Total	100.00	
Vanadium	7440-62-2	Under Bump Metal	0.028	0.000	284	0.00	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	0.642	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.001	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.001	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	13.800	0.116	137,998		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.578	0.005	5,780			Total		
Copper	7440-50-8	Solder Ball	0.072	0.001	723	0.64	(mg) Total	Chip (Die)	% of Total Weight	76.39
		TOTAL	S: 100.000	0.840	1,000,000		Doped Silicon	7440-21-3	100	
	0.00084 a T	tel Mese						Total	100.00	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	s comply with EU Directive 2002/95).	EC (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Dire	ective) and wit	th EU	0.00	(mg) Total	Redistribution Layer	% of Total Weight	0.22
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verifie emical substance is absent from the list above, the orated's knowledge and belief as of the date of this	s comply with EU Directive 2002/95). d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea	EC (ROHS Directive), EU Directive 2011/65/EU (R olier declarations, and /or analytical test data. ntional ingredient in the semiconductor device ar son to believe that the unavoidable impurity cond	id, to the best c	of Microchip To	echnology	0.00	(mg) Total Aluminum Titanium		1	0.22
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verifie emical substance is absent from the list above, the borated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ng compounds used by Microchip meet the UL94 V0	s comply with EU Directive 2002/95). d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea any regulatory scheme world-wide. flammability standard for plastics	EC (ROHS Directive), EU Directive 2011/65/EU (Ro blier declarations, and /or analytical test data. Intional ingredient in the semiconductor device ar son to believe that the unavoidable impurity cond	nd, to the best o entration of the	of Microchip To e chemical sub	echnology	0.00	Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20 30.80	0.22
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemio protective "tubes" in which the specific product is sh	s comply with EU Directive 2002/95). d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea any regulatory scheme world-wide. flammability standard for plastics cals/plastics/	EC (RoHS Directive), EU Directive 2011/65/EU (Ro plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device ar son to believe that the unavoidable impurity cond You can access the UL IQTM family of database	nd, to the best o centration of the s to obtain a tes	of Microchip To e chemical sub st report at	echnology ostance, if	0.00	Aluminum	Redistribution Layer 7429-60-5 7440-32-6	% of Total Weight 69.20 30.80	0.22 14.45
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the prorated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. oochip Technology Incorporated believes the informat original packing materials is true and correct to the b pleteness and accuracy of data in this form because i mation is often protected from disclosure as trade se ided only as estimates of the average weight of these	comply with EU Directive 2002/95). d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea any regulatory scheme world-wide. flammability standard for plastics cals/plastics/ ipped are made from polyvinyl chl- ion in this form concerning substa sets of its knowledge and belief, as t has been compiled based on the crets and some information may n parts and the average weight of a	EC (RoHS Directive), EU Directive 2011/65/EU (Ro blier declarations, and /or analytical test data. Intional ingredient in the semiconductor device ar son to believe that the unavoidable impurity cond You can access the UL IQTM family of database oride (PVC) plastic. "Window envelopes" used to neces restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technology arages provided in Material Safety Data Sheets pi ot have been provided by subcontract assembler ticipated significant toxic metals components. T	Id, to the best of entration of the s to obtain a tes hold the packin incorporated's ogy incorporate ovided by raw i	of Microchip To e chemical sub st report at ng slip on the o s semiconduct ed cannot gua material suppliers.	echnology sstance, if outer box and tor devices in rantee the liers. Supplier Information is		Aluminum	Redistribution Layer 7429-60-5 7440-32-6 Total	% of Total Weight	
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive ppliance with the above EU Directives has been verifie chemical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sh ain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the informat original packing materials is true and correct to the b pleteness and accuracy of data in this form because i rination is often protected from disclosure as trade se vided only as estimates of the average weight of these opants, metals, and non-metal materials contained wi ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporate tations, sales order acknowledgement, and invoices.	comply with EU Directive 2002/95). d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea any regulatory scheme world-wide. flammability standard for plastics cals/plastics/ ipped are made from polyvinyl chle ion in this form concerning substa set of its knowledge and belief, as t has been compiled based on the crets and some information may n parts and the average weight of a thin silicon devices (silicon IC) in t warranty, express or implied, with	EC (RoHS Directive), EU Directive 2011/65/EU (Ro blier declarations, and /or analytical test data. Intional ingredient in the semiconductor device ar son to believe that the unavoidable impurity cond You can access the UL iQTM family of database: bride (PVC) plastic. "Window envelopes" used to neces restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technology to thave been provided by subcontract assembler ticipated significant toxic metals components. T ne finished parts.	Id, to the best of entration of the s to obtain a test hold the packin Incorporated's ogy Incorporate ovided by raw is and raw mate hese estimates ation. The excl	of Microchip To e chemical sub st report at ng slip on the o s semiconduct ed cannot gua material suppliers. do not includo usive, limited	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball	% of Total Weight 69.20 30.80 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemio protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. Sochip Technology Incorporated believes the informat original packing materials is true and correct to the b leteness and accuracy of data in this form because i mation is often protected from disclosure as trade se ided only as estimates of the average weight of these pants, metals, and non-metal materials contained wi pochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated	s comply with EU Directive 2002/95). d via internal design controls, sup chemical substance is NOT an inte document, there is no credible rea any regulatory scheme world-wide. Iflammability standard for plastics cals/plastics/ ipped are made from polyvinyl chle ion in this form concerning substa sets of its knowledge and belief, as t has been compiled based on the crets and some information may n parts and the average weight of a thin silicon devices (silicon IC) in t warranty, express or implied, with ed and its subsidiaries are contained r changes to Material Content Decl the users' reliance on the information	EC (RoHS Directive), EU Directive 2011/65/EU (Ro blier declarations, and /or analytical test data. Intional ingredient in the semiconductor device ar son to believe that the unavoidable impurity cond You can access the UL iQTM family of database: oride (PVC) plastic. "Window envelopes" used to nees restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technol ranges provided in Material Safety Data Sheets pro thave been provided by subcontract assembler ticipated significant toxic metals components. T are finished parts. respect to the information provided in this declad d in Microchip's standard terms and conditions of arations and shall not be liable for any damages,	Id, to the best of entration of the s to obtain a tes hold the packin incorporated's ogy incorporate ovided by raw i s and raw mate hese estimates ration. The excl if sale. These al direct or indirect	of Microchip Tr e chemical sub st report at ag slip on the of semiconduct ed cannot gua material suppliers. do not includo usive, limited re provided in ct, consequen	echnology sstance, if outer box and or devices in rantee the liers. Supplier Information is e trace levels product Microchip's tial or		Aluminum Titanium (mg) Total Tin	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	% of Total Weight 69.20 30.80 100.00 % of Total Weight 95.50	

100.00

			P	attern (Graph	hic)		•	ogeneous Materials: e.g. pc boards, display	/s)	JEDEC 97 Produ Marking and/or Pkg. Labeling
	ce Type: 04 CSP (AL)		-	••				51		e1
		"Contained In"	% I otal	1						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.09	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.051	41.528		Silic	a Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.019	15,509		Epoxy Resi	n Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.019	15,509		Acrylic Resi	n Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.001	956		Carbon Blac		1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.015	12,300			Total	100.00	
Copper	7440-50-8	Under Bump Metal	0.212	0.003	2,120	0.02	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.001	774		Organosilicate polyme	r Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.001	421		-	Total	100.00	
Vanadium	7440-62-2	Under Bump Metal	0.028	0.000	284	0.00	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	0.932	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.002	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.001	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	14.233	0.174	142,333		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.145	0.002	1,445		E	Total	100.00	
Copper	7440-50-8	Solder Ball	0.072	0.001	723	0.93	(mg) Total	Chip (Die)	% of Total Weight	76.39
		TOTAL	S: 100.000	1.220	1,000,000		Doped Silicon	7440-21-3	100	
	0.00122 g Tot	al Mass					-	Tota	100.00	
								Total	100.00	
	comply with EU Directive 2002/95/E		HS Recast Dire	ective) and wit	h EU	0.00	(mg) Total	Redistribution Layer	% of Total Weight	0.22
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	comply with EU Directive 2002/95/E	C (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Dire	ective) and wit	h EU	0.00	(mg) Total Aluminum			0.22
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) npliance with the above EU Directives has been verifier chemical substance is absent from the list above, the c prporated's knowledge and belief as of the date of this	comply with EU Directive 2002/95/Ei d via internal design controls, suppli chemical substance is NOT an intenti document, there is no credible reaso	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. ional ingredient in the semiconductor device an	d, to the best o	of Microchip Te	echnology	0.00	(0,	Redistribution Layer 7429-60-5 7440-32-6	% of Total Weight 69.20 30.80	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this i, is not below the threshold of regulatory concern for a lding compounds used by Microchip meet the UL94 V0	comply with EU Directive 2002/95/E/ d via internal design controls, suppli chemical substance is NOT an intent document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. ional ingredient in the semiconductor device an on to believe that the unavoidable impurity conc	d, to the best o entration of the	of Microchip Te e chemical sub	echnology	0.00	Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20 30.80	
is semiconductor device and its homogenous materials rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this : y, is not below the threshold of regulatory concern for a olding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi rtain "reels" may be made from PVC plastic.	comply with EU Directive 2002/95/EI d via internal design controls, suppli chemical substance is NOT an intenti document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. ional ingredient in the semiconductor device an in to believe that the unavoidable impurity conc ou can access the UL iQTM family of databases	d, to the best o entration of the to obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if	0.00	Aluminum	Redistribution Layer 7429-60-5 7440-32-6	% of Total Weight 69.20 30.80	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance with the above EU Directives has been verified a chemical substance is absent from the list above, the of corporated's knowledge and belief as of the date of this is y, is not below the threshold of regulatory concern for a olding compounds used by Microchip meet the UL94 V0 p/ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi	comply with EU Directive 2002/95/EI d via internal design controls, suppli chemical substance is NOT an intent document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substanc est of its knowledge and belief, as of has been compiled based on the ran crets and some information may not parts and the average weight of anti-	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. ional ingredient in the semiconductor device an in to believe that the unavoidable impurity conc ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to es restricted by RoHS in Microchip Technology the date listed in this form. Microchip Technology have been provided by subcontract assemblers cipated significant toxic metals components. T	d, to the best o entration of the to obtain a tes hold the packin Incorporated's gy Incorporate ovided by raw i and raw mate	of Microchip Te e chemical sub it report at ng slip on the of semiconduct ad cannot gua material suppliers.	echnology sstance, if puter box and or devices in rantee the iers. Supplier Information is		Aluminum	Redistribution Layer 7429-60-5 7440-32-6 Total	% of Total Weight 69.20 30.80 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the corporated's knowledge and belief as of the date of this is /, is not below the threshold of regulatory concern for Jula compounds used by Microchip meet the UL94 V0 p/ul.com/global/eng/pages/offerings/industries/chemic a protective "tubes" in which the specific product is shi tain "reels" may be made from PVC plastic.	comply with EU Directive 2002/95/EI d via internal design controls, suppli chemical substance is NOT an intenti document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substanc est of its knowledge and belief, as of has been compiled based on the rail crets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. ional ingredient in the semiconductor device an in to believe that the unavoidable impurity conc ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to es restricted by RoHS in Microchip Technology the date listed in this form. Microchip Technology the date listed in Material Safety Data Sheets pr have been provided by subcontract assembler cipated significant toxic metals components. TI finished parts.	d, to the best o entration of the to obtain a tes hold the packin Incorporated's py Incorporate svided by raw i and raw mate ese estimates ation. The excli	of Microchip Te e chemical sub it report at ing slip on the of e semiconduct ad cannot gua material suppliers. do not include usive, limited	echnology sstance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball	% of Total Weight 69.20 30.80 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informati- original packing materials is true and correct to the b pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade ser- ided only as estimates of the average weight of these opants, metals, and non-metal materials contained wit ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated anties provided by Microchip Technology Incorporated non-	comply with EU Directive 2002/95/EI d via internal design controls, suppli chemical substance is NOT an intenti document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substance is to fits knowledge and belief, as of the sbeen compiled based on the rail crets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re d and its subsidiaries are contained changes to Material Content Declar: the users' reliance on the information	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. ional ingredient in the semiconductor device an on to believe that the unavoidable impurity conc ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to es restricted by RoHS in Microchip Technology i the date listed in this form. Microchip Technology i the date listed in this form. Microchip Technology i the date listed in this daterial Safety Data Sheets pr have been provided by subcontract assembler; cipated significant toxic metals components. Ti finished parts. espect to the information provided in this declar in Microchip's standard terms and conditions o ations and shall not be liable for any damages, d	d, to the best o entration of the to obtain a tes hold the packin Incorporated's gy Incorporate ovided by raw i and raw mate lese estimates ation. The excli f sale. These ar lirect or indirect	of Microchip Te e chemical sub it report at in g slip on the of semiconduct ed cannot gua material suppliers. do not include usive, limited i re provided in ct, consequent	echnology sstance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product Microchip's tial or		Aluminum Titanium (mg) Total Tin	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	% of Total Weight 69.20 30.80 100.00 % of Total Weight 98.50	

100.00

Ліскоснір			P	Pattern (Graph	nic)			ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Prod Marking and/o Pkg. Labeling e1
Semiconductor Devi	ce Type: 05 CSP (AG)			•••						ei
		"Contained In"	% I otal			0.11	(mg) Total	Backside Coating	% of Total Weight	7.35
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.11	(mg) i otal	Backside Coating	% of Total weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.060	41,528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.022	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.022	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.001	956		Carbon Black		1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.018	12,300			Total		
Copper	7440-50-8	Under Bump Metal	0.212	0.003	2,120	0.02	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.001	774		Organosilicate polymer		100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.001	421			Total		
Vanadium	7440-62-2	Under Bump Metal	0.028	0.000	284	0.01	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	1.100	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.002	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.001	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	14.233	0.205	142,333		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.145	0.002	1,445			Total		
Copper	7440-50-8	Solder Ball	0.072	0.001	723	1.10	(mg) Total	Chip (Die)	% of Total Weight	76.39
		ΤΟΤΑ	.S: 100.000	1.440	1,000,000		Doped Silicon	7440-21-3	100	
	0.00144 g Tot	tal Mass						Total	100.00	
semiconductor device and its homogenous materials	comply with FU Directive 2002/95/F	C (RoHS Directive) EU Directive 2011/65/EU (R	oHS Recast Dire	ective) and wit	h FU			1		
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) apliance with the above EU Directives has been verifie			oHS Recast Dire	ective) and wit	h EU	0.00	(mg) Total Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20	0.22
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the rporated's knowledge and belief as of the date of this). d via internal design controls, suppli chemical substance is NOT an intent document, there is no credible reaso	ier declarations, and /or analytical test data. tional ingredient in the semiconductor device a	nd, to the best o	of Microchip Te	echnology	0.00				0.22
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ppliance with the above EU Directives has been verifie hemical substance is absent from the list above, the e rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic	A via internal design controls, suppli chemical substance is NOT an intent document, there is no credible reaso my regulatory scheme world-wide. flammability standard for plastics. Y cals/plastics/	ier declarations, and /or analytical test data. tional ingredient in the semiconductor device a on to believe that the unavoidable impurity con You can access the UL iQTM family of database	nd, to the best o centration of the s to obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if	0.00	Aluminum	7429-60-5	69.20 30.80	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	A via internal design controls, suppli chemical substance is NOT an intent document, there is no credible reaso my regulatory scheme world-wide. flammability standard for plastics. Y cals/plastics/	ier declarations, and /or analytical test data. tional ingredient in the semiconductor device a on to believe that the unavoidable impurity con You can access the UL iQTM family of database	nd, to the best o centration of the s to obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if	0.00	Aluminum	7429-60-5 7440-32-6	69.20 30.80	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ppliance with the above EU Directives has been verifie chemical substance is absent from the list above, the or prorated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi	d via internal design controls, suppli chemical substance is NOT an intent document, there is no credible reaso my regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ ipped are made from polyvinyl chlori on in this form concerning substanc est of its knowledge and belief, as o t has been compiled based on the ra crets and some information may not parts and the average weight of anti	ier declarations, and /or analytical test data. tional ingredient in the semiconductor device a on to believe that the unavoidable impurity con fou can access the UL iQTM family of database ide (PVC) plastic. "Window envelopes" used to ces restricted by RoHS in Microchip Technolog f the date listed in this form. Microchip Technolog f the date listed in this form. Microchip Technolog t have been provided by subcontract assemble icipated significant toxic metals components."	nd, to the best o centration of the s to obtain a tes hold the packin y Incorporated's logy Incorporate rovided by raw i	of Microchip Te e chemical sub st report at ng slip on the o s semiconduct ed cannot gua material suppliers.	echnology sstance, if outer box and or devices in rantee the iers. Supplier Information is		Aluminum	7429-60-5 7440-32-6 Total	69.20 30.80 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ppliance with the above EU Directives has been verifie chemical substance is absent from the list above, the e rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. "ochip Technology Incorporated believes the informati- orginal packing materials is true and correct to the b pleteness and accuracy of data in this form because is mation is often protected from disclosure as trade se dided only as estimates of the average weight of these	d via internal design controls, suppli chemical substance is NOT an intent document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ ipped are made from polyvinyl chlori on in this form concerning substance est of its knowledge and belief, as o t has been compiled based on the ra crets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re	ier declarations, and /or analytical test data. tional ingredient in the semiconductor device a on to believe that the unavoidable impurity con fou can access the UL iQTM family of database ide (PVC) plastic. "Window envelopes" used to ces restricted by RoHS in Microchip Technolog f the date listed in this form. Microchip Technolog f the date listed in this form. Microchip Technolog f the been provided by subcontract assemble icipated significant toxic metals components. T e finished parts.	nd, to the best of centration of the s to obtain a tes hold the packin y Incorporated's logy Incorporate rovided by raw n s and raw mate hese estimates ration. The excli	of Microchip Tr e chemical sub st report at ng slip on the o s semiconduct ed cannot gua material suppliers. do not includo usive, limited	echnology ustance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	7429-60-5 7440-32-6 Total Solder Ball	69.20 30.80 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ppliance with the above EU Directives has been verifie chemical substance is absent from the list above, the e rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informati original packing materials is true and correct to the b pleteness and accuracy of data in this form because is irmation is often protected from disclosure as trade se vided only as estimates of the average weight of these popants, metals, and non-metal materials contained wit ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated	d via internal design controls, suppli chemical substance is NOT an intent document, there is no credible rease ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ ipped are made from polyvinyl chlori on in this form concerning substance est of its knowledge and belief, as o t has been compiled based on the ra crets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re d and its subsidiaries are contained r changes to Material Content Declar the users' reliance on the informatio	ier declarations, and /or analytical test data. tional ingredient in the semiconductor device a on to believe that the unavoidable impurity con fou can access the UL iQTM family of database ide (PVC) plastic. "Window envelopes" used to ces restricted by RoHS in Microchip Technolog if the date listed in this form. Microchip Technolog in Second Second Second Second Second Second Second in Second Second Second Second Second Second Second in Microchip's standard terms and conditions rations and shall not be liable for any damages,	nd, to the best of centration of the s to obtain a tes hold the packin y Incorporated's logy Incorporate rovided by raw s and raw mate hese estimates ration. The exclu of sale. These ar direct or indirect	of Microchip Tr e chemical sub st report at ng slip on the c s semiconduct ed cannot gua material suppliers. do not include usive, limited re provided in ct, consequent	echnology ustance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product Microchip's ial or		Aluminum Titanium (mg) Total	7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	69.20 30.80 100.00 % of Total Weight 98.50	

			P	attern (Graph	hic)			ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Proo Marking and/ Pkg. Labelin e1
Semiconductor Devi	ce Type: 08 CSP (AC)									61
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	0.11	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4,153	0.063	41,528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.023	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.023	15,509		Acrylic Resin		21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.001	956		Carbon Black		1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.019	12,300			Total	100.00	1
Copper	7440-50-8	Under Bump Metal	0.212	0.003	2,120	0.02	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.001	774		Organosilicate polymer		100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.001	421			Total	100.00	1
Vanadium	7440-62-2	Under Bump Metal	0.028	0.000	284	0.01	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	1.153	763,900	0.01	Copper	7440-50-8	58.90	0.50
Aluminum	7440-21-5	Redistribution Layer	0.152	0.002	1.522		Aluminum	7429-90-5	21.50	
Titanium	7423-00-5	Redistribution Layer	0.068	0.002	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	14.233	0.215	142.333		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.145	0.002	1.445		Vanadian	Total		1
Copper	7440-50-8	Solder Ball	0.072	0.001	723	1.15	(mg) Total	Chip (Die)	% of Total Weight	76.39
Соррен	1440 00 0	TOT		1.510	1.000.000	1.10	Doped Silicon	7440-21-3	100	10.00
			AL3. 100.000	1.510	1,000,000		Doped Silicon			J
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified	I via internal design controls, suppli	C (RoHS Directive), EU Directive 2011/65/EU (er declarations, and /or analytical test data.				0.00	(mg) Total	Total Redistribution Layer 7429-60-5	% of Total Weight 69.20	0.22
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verifier hemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this	comply with EU Directive 2002/95/E(d via internal design controls, suppli hemical substance is NOT an intenti document, there is no credible reaso	C (RoHS Directive), EU Directive 2011/65/EU (er declarations, and /or analytical test data. ional ingredient in the semiconductor device	and, to the best o	f Microchip Te	echnology	0.00		Redistribution Layer	% of Total Weight	0.22
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0	comply with EU Directive 2002/95/E(d via internal design controls, suppli hemical substance is NOT an intenti document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y	C (RoHS Directive), EU Directive 2011/65/EU (er declarations, and /or analytical test data. ional ingredient in the semiconductor device in to believe that the unavoidable impurity co	and, to the best o ncentration of the	f Microchip Te chemical sub	echnology	0.00	Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20 30.80	0.22
cctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c proprated's knowledge and belief as of the date of this - is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ;/ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi	comply with EU Directive 2002/95/E(- d via internal design controls, suppli hemical substance is NOT an intenti document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/	C (RoHS Directive), EU Directive 2011/65/EU (er declarations, and /or analytical test data. ional ingredient in the semiconductor device in to believe that the unavoidable impurity co ou can access the UL iQTM family of databas	and, to the best o ncentration of the es to obtain a tes	f Microchip Te chemical sub t report at	echnology ostance, if	0.00	Aluminum	Redistribution Layer 7429-60-5 7440-32-6	% of Total Weight 69.20 30.80	0.22
s semiconductor device and its homogenous materials active 2002/53/EC (End-of-Life Vehicles (ELV) Directive) npliance with the above EU Directives has been verifier chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 :://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati r original packing materials is true and correct to the b pleteness and accuracy of data in this form because it viaded only as estimates of the average weight of these lopants, metals, and non-metal materials contained wit	comply with EU Directive 2002/95/EG d via internal design controls, suppli hemical substance is NOT an intenti document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substanc est of its knowledge and belief, as of has been compiled based on the rar crets and some information may not parts and the average weight of anti-	C (RoHS Directive), EU Directive 2011/65/EU (er declarations, and /or analytical test data. ional ingredient in the semiconductor device in to believe that the unavoidable impurity co ou can access the UL iQTM family of databas de (PVC) plastic. "Window envelopes" used t es restricted by RoHS in Microchip Technolo the date listed in this form. Microchip Technolo the date listed in this form. Microchip Technolo pave been provided by subcontract assembl icpated significant toxic metals components.	and, to the best o ncentration of the es to obtain a tes o hold the packin gy Incorporated's ology Incorporate provided by raw r provided by raw r	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot gua naterial suppl ial suppliers.	echnology sstance, if puter box and or devices in rantee the iers. Supplier Information is		Aluminum Titanium	Redistribution Layer 7429-60-5 7440-32-6 Total	% of Total Weight 69.20 30.80 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c proprated's knowledge and belief as of the date of this : is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/Industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. rrochip Technology Incorporated believes the informatir r original packing materials is true and correct to the b pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade ser	comply with EU Directive 2002/95/EG d via internal design controls, suppli hemical substance is NOT an intenti document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substanc est of its knowledge and belief, as of has been compiled based on the rar rets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re	C (RoHS Directive), EU Directive 2011/65/EU (er declarations, and /or analytical test data. ional ingredient in the semiconductor device in to believe that the unavoidable impurity co ou can access the UL iQTM family of databas de (PVC) plastic. "Window envelopes" used t es restricted by RoHS in Microchip Technolo the date listed in this form. Microchip Technolo the date listed in this form. Microchip Technolo have been provided by subcontact assembl cipated significant toxic metals components. finished parts.	and, to the best o ncentration of the es to obtain a tes o hold the packin gy Incorporated's ology Incorporate provided by raw r ers and raw mate These estimates aration. The exclu	f Microchip Te chemical sub t report at g slip on the c semiconduct d cannot gua naterial suppl ial suppliers. do not include usive, limited	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball	% of Total Weight 69.20 30.80 100.00 % of Total Weight	
stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified hemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this is is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informati original packing materials is true and correct to the b pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade see ided only as estimates of the average weight of these opants, metals, and non-metal materials contained wit ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporate	comply with EU Directive 2002/95/EG d via internal design controls, suppli hemical substance is NOT an intenti document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substanc est of its knowledge and belief, as of has been compiled based on the rar rets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re d and its subsidiaries are contained changes to Material Content Declara- the users' reliance on the information	C (RoHS Directive), EU Directive 2011/65/EU (er declarations, and /or analytical test data. ional ingredient in the semiconductor device in to believe that the unavoidable impurity co ou can access the UL iQTM family of databas de (PVC) plastic. "Window envelopes" used i es restricted by RoHS in Microchip Technolo f the date listed in this form. Sicrochip Technolo f the date listed in this form. Sicrochip Technolo f the date listed in this form. Microchip Technolo f the date listed in this form. Microchip Technolo f the date listed in this form. Microchip Technolo f the date listed in this form. Sicrochip Technolo f the date listed in this form. Sicrochip Technolo f the date listed in this form. Microchip Technolo cipated significant toxic metals components. finished parts. Higher to the information provided in this dec in Microchip's standard terms and condition ations and shall not be liable for any damage	and, to the best o ncentration of the es to obtain a tes o hold the packin gy Incorporated's ology Incorporate provided by raw r res and raw mate These estimates aration. The exclu of sale. These ar s, direct or indirec	f Microchip Te chemical sub t report at g slip on the o semiconduct d cannot gua naterial suppliers. do not include usive, limited j e provided in t, consequent	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information i Information i Information i se trace levels product Microchip's tial or		Aluminum Titanium (mg) Total Tin	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	% of Total Weight 69.20 30.80 100.00 % of Total Weight 98.50	

Semiconductor Device	ce Type: 08 CSP (FA)			••••	•		8.1 Electronics (e	.g. pc boards, display	/s)	Pkg. Labelin e1
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	maa	0.16	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.089	41,528		Silica	Proprietary	56.5	T
Epoxy Resin	Proprietary	Backside Coating	1.551	0.033	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.033	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.002	956		Carbon Black	Proprietary	1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.026	12,300		8	Total	100.00	
Copper	7440-50-8	Under Bump Metal	0.212	0.005	2,120	0.03	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.002	774		Organosilicate polymer	Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.001	421		· · · · ·	Total	100.00	u
Vanadium	7440-62-2	Under Bump Metal	0.028	0.001	284	0.01	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	1.642	763,900		Copper	7440-50-8	58.90	1
Aluminum	7429-60-5	Redistribution Laver	0.152	0.003	1.522		Aluminum	7429-90-5	21.50	1
Titanium	7440-32-6	Redistribution Layer	0.068	0.001	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	13.944	0.300	139,443		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.434	0.009	4.335			Total	100.00	u
Copper	7440-50-8	Solder Ball	0.072	0.002	723	1.64	(mg) Total	Chip (Die)	% of Total Weight	
FF		TOTALS		2.150	1.000.000		Doped Silicon	7440-21-3	100	10.00
		101/120			.,,		Doped Billeon			1
			S Recast Dire	ective) and wit	th EU	0.00	(mg) Total	Total Redistribution Layer	% of Total Weight	
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified mical substance is absent from the list above, the c orated's knowledge and belief as of the date of this of	comply with EU Directive 2002/95/E I via internal design controls, suppl hemical substance is NOT an intent locument, there is no credible reaso	C (RoHS Directive), EU Directive 2011/65/EU (RoH ier declarations, and /or analytical test data. tional ingredient in the semiconductor device and,	to the best o	of Microchip Te	echnology	0.00	(mg) Total Aluminum Titanium	1		
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). lance with the above EU Directives has been verified emical substance is absent from the list above, the c orated's knowledge and belief as of the date of this not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 i ul.com/global/eng/pages/offerings/industries/chemic otective "tubes" in which the specific product is ship	comply with EU Directive 2002/95/E I via internal design controls, suppl hemical substance is NOT an intent locument, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. N als/plastics/	C (RoHS Directive), EU Directive 2011/65/EU (RoH ier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer You can access the UL iQTM family of databases to	to the best o htration of the o obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if	0.00	Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20 30.80	0.22
emiconductor device and its homogenous materials ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified emical substance is absent from the list above, the c orated's knowledge and belief as of the date of this of not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 VD in al.com/global/eng/pages/offerings/industries/chemic otective "tubes" in which the specific product is ship n "reels" may be made from PVC plastic. Thip Technology Incorporated believes the informatic riginal packing materials is true and correct to the be eteness and accuracy of data in this form because it alion is often protected from disclosure as trade sec ed only as estimates of the average weight of these ants, metals, and non-metal materials contained witt	comply with EU Directive 2002/95/E I via internal design controls, suppl hemical substance is NOT an intent locument, there is no credible reasy ny regulatory scheme world-wide. Ilammability standard for plastics. Y als/plastics/ oped are made from polyvinyl chlor on in this form concerning substances to f its knowledge and belief, as o has been compiled based on the ra rets and some information may not parts and the average weight of ant	C (RoHS Directive), EU Directive 2011/65/EU (RoH ier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer fou can access the UL iQTM family of databases to ide (PVC) plastic. "Window envelopes" used to he ces restricted by RoHS in Microchip Technology Ir f the date listed in this form. Microchip Technology inges provided in Material Safety Data Sheets prov t have been provided by subcontract assemblers a ciptated significant toxic metals components. The	to the best o ntration of the o obtain a tes old the packin ncorporated's ry Incorporate rided by raw in ind raw mate	of Microchip Tr e chemical sub st report at ng slip on the o semiconduct ed cannot gua material suppliers.	echnology ostance, if outer box and or devices in rantee the liers. Supplier Information is		Aluminum	Redistribution Layer 7429-60-5 7440-32-6 Total	% of Total Weight 69.20 30.80 100.00	0.22
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive), lance with the above EU Directives has been verified emical substance is absent from the list above, the c orated's knowledge and belief as of the date of this c not below the threshold of regulatory concern for an g compounds used by Microchip meet the UL94 V0 f I.com/global/eng/pages/offerings/industries/chemic otective "tubes" in which the specific product is ship "reels" may be made from PVC plastic. hip Technology Incorporated believes the informatic riginal packing materials is true and correct to the be steness and accuracy of data in this form because it ation is often protected from disclosure as trade sec of only as estimates of the average weight of these	comply with EU Directive 2002/95/E I via internal design controls, suppl hemical substance is NOT an intent focument, there is no credible reast ny regulatory scheme world-wide. Ilammability standard for plastics. Y als/plastics/ oped are made from polyvinyl chlor on in this form concerning substant sto of its knowledge and belief, as o has been compiled based on the ra rets and some information may not parts and the average weight of ant in silicon devices (silicon IC) in the warranty, express or implied, with re	C (RoHS Directive), EU Directive 2011/65/EU (RoH ier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer You can access the UL iQTM family of databases to ide (PVC) plastic. "Window envelopes" used to ho ces restricted by RoHS in Microchip Technology Ir if the date listed in this form. Microchip Technology Ir if the date listed in this form. Microchip Technology Ir i che date listed in this form. Microchip Technology Ir i che date listed in this form. Microchip Technology Ir i che date listed in this form. Microchip Technology Ir i che date listed in this form. Microchip Technology Ir i che date listed in this form. Microchip Technology Is a semblers a cipitate significant toxic metals components. The e finished parts.	to the best o ntration of the o obtain a tes old the packin accorporated's y Incorporate vided by raw i and raw mate se estimates ion. The excli	of Microchip Tr e chemical sub it report at g slip on the o s semiconduct ed cannot gua material suppliers. do not includo usive, limited	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball	% of Total Weight 69.20 30.80 100.00 % of Total Weight	0.22

AICROCHIP Semiconductor Devi	ce Type: 08 WLCSP (FH)		P	Pattern (Grap	hic)			ogeneous Materials: .g. pc boards, display	ys)	JEDEC 97 Prod Marking and/c Pkg. Labeling e1
		"Contained In"	% I otal			0.15	(mg) Total	Backside Coating	% of Total Weight	7.35
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.15	(ing) rotai	Backside Coating	78 OF TOTAL Weight	1.55
Silica	Proprietary	Backside Coating	4.153	0.085	41,528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.032	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.032	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.002	956		Carbon Black	Proprietary	1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.025	12,300			Total		
Copper	7440-50-8	Under Bump Metal	0.212	0.004	2,120	0.03	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.002	774		Organosilicate polymer	Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.001	421			Total	l 100.00	
Vanadium	7440-62-2	Under Bump Metal	0.028	0.001	284	0.01	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	1.566	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.003	1,522		Aluminum	7429-90-5	21.50	1
Titanium	7440-32-6	Redistribution Layer	0.068	0.001	678		Nickel	7440-02-0	11.70	1
Tin	7440-31-5	Solder Ball	13.872	0.284	138,720		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.506	0.010	5,058			Total	l 100.00	
Copper	7440-50-8	Solder Ball	0.072	0.001	723	1.57	(mg) Total	Chip (Die)	% of Total Weight	76.39
				2.050	1.000.000		Doped Silicon	7440.04.0	100	
		TOT	ALS: 100.000							
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)		C (RoHS Directive), EU Directive 2011/65/EU			, , .	0.00	(mg) Total	7440-21-3 Total Redistribution Layer		
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified	comply with EU Directive 2002/95/E0 d via internal design controls, supplie	al Mass C (RoHS Directive), EU Directive 2011/65/EU er declarations, and /or analytical test data.	RoHS Recast Dire	ective) and wi	th EU	0.00	<u> </u>	Total	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verifier themical substance is absent from the list above, the or prorated's knowledge and belief as of the date of this	comply with EU Directive 2002/95/E(). d via internal design controls, suppli chemical substance is NOT an intenti document, there is no credible reaso	al Mass C (RoHS Directive), EU Directive 2011/65/EU er declarations, and /or analytical test data. onal ingredient in the semiconductor device	RoHS Recast Dire	ective) and wi	th EU echnology	0.00	(mg) Total	Total Redistribution Layer	100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified hemical substance is absent from the list above, the e rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0	comply with EU Directive 2002/95/E(, d via internal design controls, suppli- chemical substance is NOT an intenti document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y	al Mass C (RoHS Directive), EU Directive 2011/65/EU er declarations, and /or analytical test data. onal ingredient in the semiconductor device n to believe that the unavoidable impurity c	RoHS Recast Dire and, to the best on centration of the	ective) and wi of Microchip T e chemical sul	th EU echnology	0.00	(mg) Total	Total Redistribution Layer 7429-60-5	1 100.00 % of Total Weight 69.20 30.80	. 0.22
s semiconductor device and its homogenous materials ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verifier chemical substance is absent from the list above, the o orporated's knowledge and belief as of the date of this r, is not below the threshold of regulatory concern for a lding compounds used by Microchip meet the UL94 V0 o://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi tain "reels" may be made from PVC plastic.	comply with EU Directive 2002/95/E(, d via internal design controls, suppli chemical substance is NOT an intenti document, there is no credible reaso iny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/	al Mass C (ROHS Directive), EU Directive 2011/65/EU er declarations, and /or analytical test data. onal ingredient in the semiconductor device n to believe that the unavoidable impurity co ou can access the UL iQTM family of databa	RoHS Recast Dire and, to the best o ncentration of the es to obtain a tes	ective) and wi of Microchip T e chemical sul st report at	th EU echnology bstance, if	0.00	(mg) Total	Total Redistribution Layer 7429-60-5 7440-32-6	1 100.00 % of Total Weight 69.20 30.80	0.22
cctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) npliance with the above EU Directives has been verified chemical substance is absent from the list above, the e proprated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatir or original packing materials is true and correct to the b pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade see vided only as estimates of the average weight of these	comply with EU Directive 2002/95/EC d via internal design controls, suppli- chemical substance is NOT an intenti document, there is no credible reaso iny regulatory scheme world-wide. flammability standard for plastics. Y- cals/plastics/ ipped are made from polyvinyl chlori- on in this form concerning substanc- est of its knowledge and belief, as of t has been compiled based on the rar crets and some information may not parts and the average weight of anti-	al Mass C (RoHS Directive), EU Directive 2011/65/EU er declarations, and /or analytical test data. onal ingredient in the semiconductor device n to believe that the unavoidable impurity c ou can access the UL iQTM family of databa de (PVC) plastic. "Window envelopes" used es restricted by RoHS in Microchip Technol the date listed in this form. Microchip Technol	RoHS Recast Dire and, to the best of centration of the es to obtain a tes o hold the packir gy Incorporated 's ology Incorporated provided by raw ers and raw mate	ective) and wi of Microchip T e chemical sui st report at ng slip on the s semiconduci ed cannot gua material supp rial suppliers.	th EU echnology bstance, if outer box and tor devices in irantee the liers. Supplier Information is		(mg) Total Aluminum Titanium	Total Redistribution Layer 7429-60-5 7440-32-6 Total	100.00 % of Total Weight 69.20 30.80	0.22
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verifier chemical substance is absent from the list above, the o orporated's knowledge and belief as of the date of this i, is not below the threshold of regulatory concern for lding compounds used by Microchip meet the UL94 V0 J/ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi	comply with EU Directive 2002/95/EC d via internal design controls, suppli- chemical substance is NOT an intenti document, there is no credible reaso iny regulatory scheme world-wide. flammability standard for plastics. Y- cals/plastics/ ipped are made from polyvinyl chlori- on in this form concerning substanc- est of its knowledge and belief, as of t has been compiled based on the rar crets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re	al Mass C (RoHS Directive), EU Directive 2011/65/EU er declarations, and /or analytical test data. onal ingredient in the semiconductor device n to believe that the unavoidable impurity c ou can access the UL iQTM family of databa de (PVC) plastic. "Window envelopes" used es restricted by RoHS in Microchip Technol the date listed in this form.	RoHS Recast Dire and, to the best of ncentration of the es to obtain a tes o hold the packir gy Incorporated's ology Incorporate provided by raw ars and raw mate These estimates aration. The excl	ective) and wi of Microchip T e chemical sui st report at ng slip on the s semiconduci ed cannot gua material supp irial suppliers. do not includ usive, limited	echnology bstance, if outer box and tor devices in rrantee the liers. Supplier Information is e trace levels product		(mg) Total Aluminum Titanium (mg) Total	Total Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball	100.00 % of Total Weight 69.20 30.80 100.00 % of Total Weight	0.22
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pllance with the above EU Directives has been verified themical substance is absent from the list above, the e rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informati original packing materials is true and correct to the b pleteness and accuracy of data in this form because if mation is often protected from disclosure as trade se- ided only as estimates of the average weight of these opants, metals, and non-metal materials contained wit ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated form long on the second of the only and the second of the only and the second of the only and the second of the	comply with EU Directive 2002/95/EC d via internal design controls, suppli- chemical substance is NOT an intenti document, there is no credible reaso iny regulatory scheme world-wide. flammability standard for plastics. Y- cals/plastics/ ipped are made from polyvinyl chlori- on in this form concerning substanc- est of its knowledge and belief, as of t has been compiled based on the rar crets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re d and its subsidiaries are contained is changes to Material Content Declara- the users' reliance on the information	al Mass C (RoHS Directive), EU Directive 2011/65/EU er declarations, and /or analytical test data. onal ingredient in the semiconductor device n to believe that the unavoidable impurity c ou can access the UL iQTM family of databa de (PVC) plastic. "Window envelopes" used es restricted by RoHS in Microchip Technol- the date listed in this form. Microchip Technol- the date listed in this form. Microchip Technol- the date listed in this form. Microchip Technol- tiges provided by subcontract assemb cipated significant toxic metals components finished parts. spect to the information provided in this de- n Microchip's standard terms and conditior attons and shall not be liable for any damage	RoHS Recast Dire and, to the best of ncentration of the es to obtain a tes o hold the packir gy Incorporated's ology Incorporated provided by raw ars and raw mate These estimates aration. The excl of sale. These ar s, direct or indire	ective) and wi of Microchip T e chemical sui st report at ng slip on the semiconduci ed cannot gua material suppliers. do not includ usive, limited re provided in ct, consequen	th EU echnology bstance, if outer box and tor devices in irrantee the liers. Supplier Information is e trace levels product Microchip's tial or		(mg) Total Aluminum Titanium (mg) Total Tin	Total Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	100.00 % of Total Weight 69.20 30.80 100.00 % of Total Weight 96.00	0.22

			P	attern (Graph	nic)			ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Produ Marking and/or Pkg. Labeling e1
Semiconductor Devi	ce Type: 08 WLCSP (FZ)								-	
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	0.13	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.075	41.528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.028	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.028	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.002	956		Carbon Black	Proprietary	1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.022	12,300			Total	100.00	•
Copper	7440-50-8	Under Bump Metal	0.212	0.004	2,120	0.02	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.001	774		Organosilicate polymer	Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.001	421			Total	100.00	
Vanadium	7440-62-2	Under Bump Metal	0.028	0.001	284	0.01	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	1.383	763.900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.003	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.001	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	13.800	0.250	137,998		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.578	0.010	5,780			Total	100.00	1
Copper	7440-50-8	Solder Ball	0.072	0.001	723	1.38	(mg) Total	Chip (Die)	% of Total Weight	76.39
		TOTALS:	100.000	1.810	1.000.000		Doped Silicon	7440-21-3	100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive		EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ective) and wit	h EU	0.00	(mg) Total	Total Redistribution Layer	% of Total Weight	0.22
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive bliance with the above EU Directives has been verifie remical substance is absent from the list above, the porated's knowledge and belief as of the date of this	comply with EU Directive 2002/95/ d via internal design controls, supp chemical substance is NOT an inter document, there is no credible reas	EC (RoHS Directive), EU Directive 2011/65/EU (RoH vlier declarations, and /or analytical test data. ntional ingredient in the semiconductor device and,	to the best o	f Microchip Te	echnology	0.00	(mg) Total Aluminum Titanium			0.22
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0	comply with EU Directive 2002/95/ , d via internal design controls, supp chemical substance is NOT an inter document, there is no credible rear noy regulatory scheme world-wide. flammability standard for plastics.	EC (ROHS Directive), EU Directive 2011/65/EU (ROH olier declarations, and /or analytical test data. ntional ingredient in the semiconductor device and, son to believe that the unavoidable impurity concer	to the best o stration of the	f Microchip Te chemical sub	echnology	0.00	Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20 30.80	
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the prorated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic.	comply with EU Directive 2002/95/ , d via internal design controls, supp chemical substance is NOT an inter document, there is no credible reas noy regulatory scheme world-wide. flammability standard for plastics. als/plastics/	EC (ROHS Directive), EU Directive 2011/65/EU (ROH Dier declarations, and /or analytical test data. Intional ingredient in the semiconductor device and, son to believe that the unavoidable impurity concer You can access the UL iQTM family of databases to	to the best o atration of the p obtain a tes	f Microchip Te e chemical sub t report at	echnology ostance, if	0.00	Aluminum	Redistribution Layer 7429-60-5 7440-32-6	% of Total Weight 69.20 30.80	
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ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informat original packing materials is true and correct to the b pleteness and accuracy of data in this form because is mation is often protected from disclosure as trade se ided only as estimates of the average weight of these	comply with EU Directive 2002/95/ , d via internal design controls, supp shemical substance is NOT an inter document, there is no credible reas ny regulatory scheme world-wide. flammability standard for plastics. als/plastics/ ipped are made from polyvinyl chlor on in this form concerning substar est of its knowledge and belief, as has been compiled based on the r crets and some information may no parts and the average weight of an hin silicon devices (silicon IC) in th warranty, express or implied, with	EC (RoHS Directive), EU Directive 2011/65/EU (RoH blier declarations, and /or analytical test data. thional ingredient in the semiconductor device and, son to believe that the unavoidable impurity concer You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to ho nees restricted by RoHS in Microchip Technology Ir of the date listed in this form. Microchip Technology to the been provided by subcontract assemblers a ticipated significant toxic metals components. The re finished parts.	to the best o tration of the o obtain a tes old the packin accorporated's y Incorporate ided by raw i und raw mate se estimates ion. The excli	f Microchip Te e chemical sub t report at g slip on the c semiconduct ed cannot gua material suppl rial suppliers. do not include usive, limited	echnology sstance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball	% of Total Weight 69.20 30.80 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 /ul.com/global/eng/pages/offerings/industries/chemi- protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. bochip Technology Incorporated believes the informat original packing materials is true and correct to the b leteness and accuracy of data in this form because i mation is often protected from disclosure as trade se ded only as estimates of the average weight of these pants, metals, and non-metal materials contained wi ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated	comply with EU Directive 2002/95/ , d via internal design controls, supp chemical substance is NOT an inter document, there is no credible reas iny regulatory scheme world-wide. flammability standard for plastics. als/plastics/ ipped are made from polyvinyl chlor on in this form concerning substan- est of its knowledge and belief, as thas been compiled based on the r- crets and some information may ne parts and the average weight of ar hin silicon devices (silicon IC) in the warranty, express or implied, with d and its subsidiaries are containe r changes to Material Content Decla the users' reliance on the informati-	EC (RoHS Directive), EU Directive 2011/65/EU (RoH blier declarations, and /or analytical test data. ational ingredient in the semiconductor device and, son to believe that the unavoidable impurity concer You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to he the set of the date listed in this form. Microchip Technology Ir of the date listed in this form. Microchip Technology to anges provided in Material Safety Data Sheets provide the semprovided by subcontract assemblers a ticipated significant toxic metals components. The set finished parts. respect to the information provided in this declarat d in Microchip's standard terms and conditions of starations and shall not be liable for any damages, dii	to the best o tration of the o obtain a tes old the packin acorporated's y Incorporate ided by raw i ind raw mate se estimates ion. The exclu- sale. These ar ect or indirec	f Microchip Te e chemical sub t report at g slip on the c semiconduct ed cannot gua material suppliers. do not include usive, limited j e provided in ct, consequent	echnology stance, if puter box and or devices in rantee the iers. Supplier Information is trace levels product Microchip's tial or		Aluminum Titanium (mg) Total	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	% of Total Weight 69.20 30.80 100.00 % of Total Weight 95.50 95.50	

			P	attern (Graph	hic)		•	ogeneous Materials: g. pc boards, display	ys)	JEDEC 97 Prod Marking and/o Pkg. Labeling e1
Semiconductor Devi	ce Type: 14 CSP (AP)									
		"Contained In"	% I otal							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.38	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.212	41,528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.079	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.079	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.005	956		Carbon Black	Proprietary	1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.063	12,300			Total	l 100.00	
Copper	7440-50-8	Under Bump Metal	0.212	0.011	2,120	0.06	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.004	774		Organosilicate polymer	Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.002	421			Total	l 100.00	
Vanadium	7440-62-2	Under Bump Metal	0.028	0.001	284	0.02	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	3.904	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.008	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.003	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	14.233	0.727	142,333		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.145	0.007	1,445			Total	l 100.00	
Copper	7440-50-8	Solder Ball	0.072	0.004	723	3.90	(mg) Total	Chip (Die)	% of Total Weight	76.39
		TO	LS: 100.000	5.110	1,000,000		Doped Silicon	7440-21-3	100	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive)).	5/EC (RoHS Directive), EU Directive 2011/65/EU	RoHS Recast Dire	ective) and wit	th EU	0.01	(mg) Total	Total Redistribution Layer 7429-60-5	1 100.00 % of Total Weight 69.20	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) liance with the above EU Directives has been verifier emical substance is absent from the list above, the o porated's knowledge and belief as of the date of this	: comply with EU Directive 2002/9). d via internal design controls, su chemical substance is NOT an int document, there is no credible re	5/EC (RoHS Directive), EU Directive 2011/65/EU oplier declarations, and /or analytical test data. antional ingredient in the semiconductor device ason to believe that the unavoidable impurity c	and, to the best o	of Microchip Te	echnology	0.01	,	Redistribution Layer	% of Total Weight	
semiconductor device and its homogenous materials tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) bilance with the above EU Directives has been verifien emical substance is absent from the list above, the or porated's knowledge and belief as of the date of this s not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 VO u.l.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi in "reels" may be made from PVC plastic.	comply with EU Directive 2002/9), d via internal design controls, sup chemical substance is NOT an int document, there is no credible re ny regulatory scheme world-wide flammability standard for plastic: cals/plastics/	5/EC (RoHS Directive), EU Directive 2011/65/EU opplier declarations, and /or analytical test data. entional ingredient in the semiconductor devic asson to believe that the unavoidable impurity c s. You can access the UL iQTM family of databa	and, to the best on ncentration of the es to obtain a tes	of Microchip Te e chemical sub st report at	echnology bstance, if	0.01	Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20 30.80	0.22
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) blance with the above EU Directives has been verifie- nemical substance is absent from the list above, the o porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 /uL.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi in "reels" may be made from PVC plastic. The production of the protection of the protective to the b bleteness and accuracy of data in this form because it mation is often protected from disclosure as trade see ded only as estimates of the average weight of these pants, metals, and non-metal materials contained wit whiles provided by Microchip Technology Incorporated tions, sales order acknowledgement, and invoices.	comply with EU Directive 2002/9 , d via internal design controls, suj chemical substance is NOT an int document, there is no credible re nny regulatory scheme world-widd flammability standard for plastic cals/plastics/ ipped are made from polyvinyl ch ion in this form concerning subst test of its knowledge and belief, a t has been compiled based on the crets and some information may i parts and the average weight of i thin silicon devices (silicon IC) in warranty, express or implied, with d and its subsidiaries are contain	SPEC (RoHS Directive), EU Directive 2011/65/EU opplier declarations, and /or analytical test data. entional ingredient in the semiconductor device ason to believe that the unavoidable impurity c s. You can access the UL iQTM family of databa- loride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technol s of the date listed in this form. Microchip Technol s of the date listed in this form. Microchip Technol to have been provided by subcontract assemt inticipated significant toxic metals components the finished parts. In respect to the information provided in this de ed in Microchip's standard terms and condition	and, to the best of ncentration of the es to obtain a test o hold the packir gy Incorporated's ology Incorporated sology Incorporat provided by raw mate These estimates aration. The excl of sale. These a	of Microchip Td e chemical sub it report at g slip on the d s semiconduct ed cannot gua material suppliers. do not include usive, limited in	echnology ostance, if outer box and tor devices in rantee the lifers. Supplier Information is e trace levels product Microchip's		Aluminum	Redistribution Layer 7429-60-5 7440-32-6 Total	% of Total Weight 69.20 30.80 100.00	0.22
ive 2002/53/EC (End-of-Life Vehicles" (ELV) Directive) liance with the above EU Directives has been verifies semical substance is absent from the list above, the di- portated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ng compounds used by Microchip meet the UL94 VO ul.com/global/eng/pages/offerings/industries/chemic rotective "tubes" in which the specific product is shi n "reels" may be made from PVC plastic. chip Technology Incorporated believes the informati original packing materials is true and correct to the b leteness and accuracy of data in this form because it nation is often protected from disclosure as trade see fed only as estimates of the average weight of these bants, metals, and non-metal materials contained wit chip Technology Incorporated does not provide any nties provided by Microchip Technology Incorporated	comply with EU Directive 2002/9 , d via internal design controls, sup chemical substance is NOT an int document, there is no credible re ny regulatory scheme world-wide flammability standard for plastic: cals/plastics/ ipped are made from polyvinyl ch ion in this form concerning subst: to is thas been compiled based on the crets and some information may parts and the average weight of a thin silicon devices (silicon IC) in warranty, express or implied, with d and its subsidiaries are contain r changes to Material Content Dec the users' reliance on the information	5/EC (RoHS Directive), EU Directive 2011/65/EU opplier declarations, and /or analytical test data. antional ingredient in the semiconductor device ason to believe that the unavoidable impurity c . You can access the UL iQTM family of databa loride (PVC) plastic. "Window envelopes" used ances restricted by RoHS in Microchip Technol s of the date listed in this form. Microchip Technol s of the date listed in this form. Microchip Technol to thave been provided by subcontract assemt mitcipated significant toxic metals components the finished parts. In respect to the information provided in this de ed in Microchip's standard terms and conditior larations and shall not be liable for any damage	and, to the best of ncentration of the es to obtain a tes o hold the packir gy Incorporated's ology Incorporat orovided by raw ars and raw mate These estimates aration. The excl of sale. These al c, direct or indirect	of Microchip Tr e chemical sub at report at g slip on the c semiconduct ed cannot gua material suppliers. do not include usive, limited re provided in ct, consequent	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product Microchip's tial or		Aluminum Titanium (mg) Total	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	% of Total Weight 69.20 30.80 100.00 % of Total Weight 98.50	0.22

				attern (Graph				ogeneous Materials: e.g. pc boards, display	/s)	JEDEC 97 Prod Marking and/o Pkg. Labeling e1
Semiconductor Devi	ce Type: 16 CSP (FB)									•••
		"Contained In"	% I otal							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.40	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.227	41,528		Silic	a Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.085	15,509		Epoxy Resi	n Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.085	15,509		Acrylic Resi	n Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.005	956		Carbon Blac	k Proprietary	1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.067	12,300			Total		
Copper	7440-50-8	Under Bump Metal	0.212	0.012	2,120	0.07	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.004	774		Organosilicate polyme	r Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.002	421			Total	100.00	
Vanadium	7440-62-2	Under Bump Metal	0.028	0.002	284	0.02	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	4.171	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.008	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.004	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	13.944	0.761	139,443		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.434	0.024	4,335			Total		
Copper	7440-50-8	Solder Ball	0.072	0.004	723	4.17	(mg) Total	Chip (Die)	% of Total Weight	76.39
				5.460	1.000.000		Doped Silicon	7440-21-3	100	
		TC	TALS: 100.000	3.400	1,000,000		Doped Official			
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)		al Mass C (RoHS Directive), EU Directive 2011/65/EU			,,	0.01	(mg) Total	Total Redistribution Layer 7429-60-5		
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) bliance with the above EU Directives has been verified nemical substance is absent from the list above, the of porated's knowledge and belief as of the date of this	comply with EU Directive 2002/95/E J via internal design controls, suppli hemical substance is NOT an intent document, there is no credible reasc	tal Mass C (RoHS Directive), EU Directive 2011/65/EI ier declarations, and /or analytical test data ional ingredient in the semiconductor devi	(RoHS Recast Dire	ective) and wit	h EU echnology	0.01	(mg) Total	Total Redistribution Layer	100.00 % of Total Weight	
semiconductor device and its homogenous materials tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verifier hemical substance is absent from the list above, the of porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0	comply with EU Directive 2002/95/E via internal design controls, suppli hemical substance is NOT an intent document, there is no credible reasc ny regulatory scheme world-wide. flammability standard for plastics. Y	tal Mass C (RoHS Directive), EU Directive 2011/65/EI ier declarations, and /or analytical test data ional ingredient in the semiconductor devi on to believe that the unavoidable impurity	(RoHS Recast Direction of the best of the second se	ective) and wit of Microchip Te e chemical sub	h EU echnology	0.01	(mg) Total	Total Redistribution Layer 7429-60-5	100.00 % of Total Weight 69.20 30.80	0.22
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tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified hemical substance is absent from the list above, the of porated's knowledge and belief as of the date of this is is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 /ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi	comply with EU Directive 2002/95/E i via internal design controls, suppli hemical substance is NOT an intent document, there is no credible reasc ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substance est of its knowledge and belief, as of has been compiled based on the rai rets and some information may not parts and the average weight of anti-	tal Mass C (RoHS Directive), EU Directive 2011/65/EU ier declarations, and /or analytical test data tional ingredient in the semiconductor devio on to believe that the unavoidable impurity (ou can access the UL iQTM family of datab ide (PVC) plastic. "Window envelopes" use ces restricted by RoHS in Microchip Techno f the date listed in this form. Microchip Techno e have been provided by subcontract assem icipated significant toxic metals componen	(RoHS Recast Dire e and, to the best of oncentration of the ases to obtain a test I to hold the packir ogy Incorporated's nology Incorporated's nology Incorporated s provided by raw olers and raw mate	of Microchip Te chemical sub t report at g slip on the c semiconduct d cannot guai material suppliers.	h EU echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is		(mg) Total Aluminum Titanium	Total Redistribution Layer 7429-60-5 7440-32-6 Total	100.00 % of Total Weight 69.20 30.80 100.00	0.22
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) plance with the above EU Directives has been verifier hemical substance is absent from the list above, the o porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 /ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi in "reels" may be made from PVC plastic. Suchip Technology Incorporated believes the informatii original packing materials is true and correct to the b pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade see ded only as estimates of the average weight of these	comply with EU Directive 2002/95/E d via internal design controls, suppli themical substance is NOT an intent document, there is no credible reason ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substances est of its knowledge and belief, as of has been compiled based on the rai rets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re	tal Mass C (RoHS Directive), EU Directive 2011/65/EU er declarations, and /or analytical test data tional ingredient in the semiconductor devio on to believe that the unavoidable impurity /ou can access the UL iQTM family of datab ide (PVC) plastic. "Window envelopes" use ces restricted by RoHS in Microchip Techno f the date listed in this form. Microchip Tec nges provided in Material Safety Data Shee thave been provided by subcontract assem ciptated significant toxic metals componen e finished parts.	(RoHS Recast Dire e and, to the best of oncentration of the ases to obtain a test to hold the packir ogy Incorporated's inology Incorporated s provided by raw olers and raw mate s. These estimates claration. The excl	f Microchip Te chemical sub t report at g slip on the c semiconduct d cannot guar naterial suppliers. do not include usive, limited j	h EU echnology sstance, if outer box and or devices in rantee the iers. Supplier Information is trace levels product		(mg) Total Aluminum Titanium (mg) Total	Total Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball	100.00 % of Total Weight 69.20 30.80 100.00 % of Total Weight	0.22
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) liance with the above EU Directives has been verified emical substance is absent from the list above, the o corated's knowledge and belief as of the date of this is in the below the threshold of regulatory concern for a g compounds used by Microchip meet the UL94 VO ul.com/global/eng/pages/offerings/industries/chemic otective "tubes" in which the specific product is shi n "reels" may be made from PVC plastic. chip Technology Incorporated believes the informati- riginal packing materials is true and correct to the b eteness and accuracy of data in this form because it aution is often protected from disclosure as trade set led only as estimates of the average weight of these shants, metals, and non-metal materials contained wit ship Technology Incorporated does not provide any tites provided by Microchip Technology Incorporate	comply with EU Directive 2002/95/E d via internal design controls, suppli themical substance is NOT an intent document, there is no credible reason ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substance est of its knowledge and belief, as of has been compiled based on the rar- rets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re d and its subsidiaries are contained changes to Material Content Declar. the users' reliance on the informatio	tal Mass C (RoHS Directive), EU Directive 2011/65/EI ier declarations, and /or analytical test data tional ingredient in the semiconductor devic on to believe that the unavoidable impurity (ou can access the UL iQTM family of datab- ide (PVC) plastic. "Window envelopes" use ces restricted by RoHS in Microchip Techno f the date listed in this form. Microchip Techno f inshed parts. espect to the information provided in this d in Microchip's standard terms and conditic ations and shall not be liable for any dama	(RoHS Recast Dire e and, to the best of oncentration of the ases to obtain a test is to hold the packir ogy Incorporated's nology In	f Microchip Te e chemical sub t report at g slip on the c semiconduct: do cannot guan material suppliers. do not include usive, limited j e provided in t, consequent	h EU echnology stance, if outer box and or devices in rantee the iers. Supplier Information is t trace levels product Microchip's ial or		(mg) Total Aluminum Titanium (mg) Total Tin	Total Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	100.00 % of Total Weight 69.20 30.80 100.00 % of Total Weight 96.50	0.22

9:16 AM : 10/17/2014

chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in priginal packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the leteness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier nation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is led only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels anates, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product these provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's Silver 7440-22-4 1.00		in True 40 00D (AN)		Pi	attern (Grapi	nic)			ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Prod Marking and/o Pkg. Labeling e1
Basic Subtance CAS (wing) Sub-Component Weight mogan pon 0.4 (m) Total Backade cosing (% of total Weight 7.5 Sina Proprietary Backade Cosing 1.55 0.091 15.502 Excore Real Proprietary 2.1 <th>Semiconductor Dev</th> <th>ice Type: 18 CSP (AM)</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Semiconductor Dev	ice Type: 18 CSP (AM)									
Laste Statistice CAX Number Sub-Component Wright Ippn Component Wright Ippn Component State Statistice							0.42	(mg) Total	Backsido Coating	% of Total Waight	7 25
Epop Ream Processing Backalia Colling 1.551 0.001 15.569 Archic Ream Processing Backalia Colling 1.551 0.001 15.569 Control Ream Processing Backalia Colling 0.001 15.569 Control Ream Processing Backalia Colling 0.001 15.569 Control Ream Processing Backalia Colling 0.001 15.569 Comport 1.440-503 Under Burn Metal 0.027 0.002 774 Control Ream 7.61 Control Ream 7.61 <t< td=""><td></td><td>CAS Number</td><td>Sub-Component</td><td>,</td><td></td><td></td><td>0.45</td><td>(ing) rotai</td><td>Backside Coaling</td><td>% of Total Weight</td><td>1.55</td></t<>		CAS Number	Sub-Component	,			0.45	(ing) rotai	Backside Coaling	% of Total Weight	1.55
Advalue Statistic Proprietary Backsode Coating 1.551 0.091 15,509 0.001 Capuer 11 Organoolition Plance Trade Scotet PPO (planty) Backsode Coating 0.081 15,609 0.0000 0.											
Carbon Black Projectary Backade Coating 0.008 956 Coating Carbon Black Productary 1.3 Copper 7440324 Under Simp Med 0.21 0.017 2.120 0.07 registry 1.3 Mode 7440324 Under Simp Med 0.21 0.017 2.120 0.07 registry 1.3 Works 7440470 Under Simp Med 0.022 741 0.02 registry 1.03 0.00 1.02 0.00 1.02 0.00 1.02 0.02 registry 1.04 0.00 0.00 2.04 0.02 registry 1.04 0.00 2.05 0.00 1.02 0.02 7404326 1.00 0.00 2.05 0.00 1.02 0.00 1.02 0.00 1.02 0.00 1.02 0.00 1.02 0.00 1.02 0.00 1.02 0.00 1.02 0.00 1.02 0.00 1.02 0.00 1.02 0.00 1.02 0.00 1.00 0.00<											
$ \frac{\text{Cryptomelian to polymer}{\text{All models}} \\ \hline \text{Capper}{\text{All models}} \\ \hline \text{Capper}{\text{All models}} \\ \hline \text{All models} \\ \hline All model$											
C Coper 7440-50-8 Under Bump Metal 0.712 0.012 7.100 PPO Layer % of Text Weight 1.20 Aluminum 7420-00-5 Under Bump Metal 0.072 0.002 774 Organization point Tradit								Carbon Black		1.0	
Allminum 742-90-5 Under Barry Meil 0.077 0.005 774 Cogenoticate poyner Intel 10.00 Variadum 7440-62-0 Under Barry Meil 0.042 0.002 421 Total 10.00 Since 7440-62-1 Under Barry Meil 0.022 294 0.02 fmg 7440-62-0 11.07 Tim 7440-22-6 Reset/Dulon Layer 0.088 0.004 673 10.004 7440-22-0 11.07 Silver 7440-22-4 Solder Ball 0.145 0.005 1.445 10.000 Nicket 7440-22-0 73.00 Silver 7440-22-4 Solder Ball 0.167 0.005 1.445 10.000 10.											
Nikal 7440-020 Under Bum, Meil 0.042 0.002 2421 Total Total 100.00 Silicon 7440-213 Chip (Dei) 76.390 4.461 763.000 284 0.02 (mg Total) Under Bum, Media 56.90 36.00 284 0.02 (mg Total) Under Bum, Media 56.90 36.00 <							0.07				1.23
Variation 7440-52-2 Under Bump Meilal 0.028 0.022 284 0.02 (mg) Total Under Bump Metal % of Total Weight 0.38 Aluminum 7420-80-5 Redistribution Layer 0.162 0.000 1.522 7.830 Aluminum 7420-80-5 5.830 2.930 Aluminum 7420-80-5 5.830 2.930 Aluminum 7420-80-5 5.830 2.930 Aluminum 7420-80-5 5.130 Note 7.830 Aluminum 7420-80-5 5.130 Note 7.830 Aluminum 7420-80-5 7.830 Aluminum 7420-80-5 7.830 Aluminum 7420-80-5 7.830 Note 7.840 Note Note <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Organosilicate polymer</td><td></td><td></td><td></td></t<>								Organosilicate polymer			
Silton 7440 21:3 Chip (De) 78.300 4.461 7763.300 7763.300 Muminum 7426 90.5 Redistribution Layer 0.058 0.0068 1.522 Nation 7440 52.5 55.00 Tim 7440 32.6 Redistribution Layer 0.068 0.064 678 Nation 7440 62.2 11.70 Silver 7440 22.4 Solder Ball 0.145 0.0054 1.423 Capper 7440 62.2 7.300 Muminum 7429 90.5 Redistribution Layer 0.0058 0.0054 1.425 Value 7.440 62.2 7.830 Micro Copper 7440 62.4 Solder Ball 0.014 0.005 5.640 1,000.00 5.640 1,000.00 7.630 7.6											
Auminum 7429-90-5 Redistribution Layer 0.152 0.0064 1522 Tranum 7420-93-5 Redistribution Layer 0.068 0.064 6763 Name 7440-93-5 Sodder Ball 1.223 0.837 1.70 Variation 7440-92-2 7,80 Copper 7440-92-4 Sodder Ball 0.142 0.068 1,46 4.46 (mg) Total 76.19 100.00 9.26 7.83 100.00 100.01 % of Total Weight 76.39 amic with the above EU Directives 2002/PSCF (Grof SD Directive), EU Directive 2017/6SEU (RoHS Recast Directive) and with EU 0.01 (mg) Total Redistribution Layer % of Total Weight 0.22 Incore with the above EU Directive Souther EU Directive 2002/PSCF (Grof SD Directive), EU Directive 2002/PSCF (Grof SD Directiv						-	0.02	(mg) Total			0.36
Tim 7440-32-6 Redistribution Layer 0.068 0.004 678 Tin 7440-32-6 Solder Ball 14.2333 0.381 142.333 0.381 142.333 Biver 7440-52-6 Solder Ball 0.145 0.006 14.45 14.433 Copper 7440-52-8 Solder Ball 0.0172 0.006 7.423 100.00 Copper 7.440-52-8 Solder Ball 0.0172 0.006 7.424 100.00 Copper 7.400-52-8 Total 100.00 5.444 1.000.00 1.445 Microchip response 0.00584 g Total Mass Total 100.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445 1.000.00 1.445											
Tin 7440 315 Solder Ball 14 233 0.831 14/2333 Variadium 740-062 7.90 Copper 7440 50-8 Solder Ball 0.072 0.004 7/23 4.46 (mg) Total Chip (Dis) % of Total Weight 7.8.39 miconductor device and its homogenous materials comply with EU Directive 2002/85/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 0.001 (mg) Total Redstribution Laye % of Total Weight 0.22 wite address absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology 0.01 (mg) Total Redstribution Laye % of Total Weight 0.22 usonglobale/pages/offering											
Silver 7440524 Solder Ball 0.145 0.008 1.445 Copper 7440528 Solder Ball 0.072 0.004 723 4.46 Gild Teall Chip (bil) %of Total Weight 76.39 amiconductor device and its homogenous materials comply with EU Directive 2002/05/EC (End of LIV Directive). ED is a complex to the second of											
Copper 7440-50-8 Solder Bail 0.072 0.004 723 4.46 (mg) Total Chyp (De) % of Total Weight 76.39 amiconductor device and its homogenous materials comply with EU Directive 2002/53/CC (End-of-Life Vehicles (ELV) Directive). Directive 2002/53/CC (Bot S) Endersity). Directive 2002/53/CC (Bot S) Endersity). 0.01 (mg) Total Redistribution Layer % of Total Weight 0.22 unclass bistances in the list above, the chemical substances is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology norated* knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if a not below the threshold of regulatory concern for any regulatory scheme world-wide. Total 0.01 (mg) Total Redistribution Layer % of Total Weight 0.22 orated with the above EU Directives has been verified via internal design controls, supplier declarations, and / or analytical test data. Microchip Technology incorporated Substance, if a not below the the ULS4V 01 fammability standard for plastics. You can access the UL IOTM family of databases to obtain a test report at u.com/joloal/englogae/clorings/industris/schemicals/bastics/ Microchip Technology incorporated Substance Total 0.00 0.84 (mg) Total Solder Bail % of Total Weight 14.45								Vanadium			
Image: Note of the second se											
Output the second second provided in the form provided in the second provided in Microchip Technology Incorporated believes the second provided in Microchip Technology Incorporated believes the second provided in Microchip Technology Incorporated believes the second provided in the second provided in Microchip Technology Incorporated believes the theore the second provided provided in the second provided provided in Microchip Technology Incorporated believes the Information in this form concerning substances restricted by ROFS in Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROFS in Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROFS in Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROFS in Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROFS in Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROFS in Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROFS in Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROFS in Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROFS in Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROFS in Microchip Technology Incorporated believes the information in this form mocreal substances in the average weight of these parts and the average weight of these parts and the average weight of anticipated significant toxic metals contained on the second substances in the average weight of these parts and the average to the information in Miterial Scient and the average weight of these parts and the average to the information in Miterial Scient and the averag	Copper	7440-50-8					4.46			% of Total Weight	76.39
the second			TOTALS:	100.000	5.840	1,000,000		Doped Silicon			
Uve 20025/EC (End-d-Life Vehicles (ELV) Directive). Velocities (End-d-Life Vehicles (ELV) Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Illiance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. encical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology torotor for any regulatory concern for any regulatory concern for any regulatory concern for any regulatory scheme verifies vession to believe that the unavoidable impurity concentration of the chemical substance, if not believe the threshold of regulatory concern for any regulatory scheme verifies for duct is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and "reels" may be made from PVC plastic. Velocities "Like Scheme" (Like Scheme" Sch		0.00584 a To	tal Mass						Total	100.00	
is com/global/eng/gages/offerings/industries/chemicals/plastics/ incom/global/eng/gages/offerings/industries/ incom/global/eng/gages/offerings/industries/ incom/global/eng/gages/offerings/industries/ incom/global/eng/gages/offerings/industries/ incom/global/eng/gages/offerings/industries/ incom/global/eng/gages/offerings/industries/ incom/global/eng/gages/offerings/industries/ incom/global/eng/gages/offerings/industries/ incom/global/eng/gages/offerings/industries/ incom/	ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive	2).	· · · · · ·	S Recast Dire	ective) and wit	h EU	0.01	(3)			0.22
chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in priginal packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the leteness and accuracy of data in this form because it has been compiled based on the ranges provided by Subcontract assemblers and raw material suppliers. Suppliers Suppliers Suppliers being the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels bants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product trites provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's toins, sales order acknowledgement, and invoices. chip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or s Corpper 7440-50-8 0.50	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie memical substance is absent from the list above, the porated's knowledge and belief as of the date of this	e). ed via internal design controls, suppl chemical substance is NOT an inten s document, there is no credible reas	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and,	to the best o	of Microchip Te	echnology	0.01	Aluminum	7429-60-5	69.20	0.22
nties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's Silver 7440-22-4 1.00 tions, sales order acknowledgement, and invoices. chip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Corpper 7440-50-8 0.50	stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the reporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemi	e). ad via internal design controls, suppl chemical substance is NOT an inten i document, there is no credible reas- any regulatory scheme world-wide. O flammability standard for plastics. cals/plastics/	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer You can access the UL iQTM family of databases to	to the best o tration of the o obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if		Aluminum	7429-60-5 7440-32-6 Total	69.20 30.80 100.00	
wise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or Copper 7440-50-8 0.50 certificate of Compliance for semiconductor products.	stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verific hemical substance is absent from the list above, the prorated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the informat original packing materials is true and correct to the l pleteness and accuracy of data in this form because i mation is often protected from disclosure as trade sa died only as estimates of the average weight of these	b). ad via internal design controls, supplicher international substance is NOT an international substance is NOT an international endethy and there is no credible reasonary regulatory scheme world-wide. D flammability standard for plastics. Cals/plastics/ inped are made from polyvinyl chlor in this form concerning substances of its knowledge and belief, as of it has been compiled based on the racerets and some information may no e parts and the average weight of anti- parts.	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concern You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to ho ces restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technology anges provided in Material Safety Data Sheets prov t have been provided by subcontract assemblers a ticipated significant toxic metals components. The	to the best o tration of the o obtain a tes Id the packin corporated's y Incorporate ided by raw r ind raw mater	of Microchip Tr e chemical sub it report at ng slip on the of s semiconduct ed cannot gua material suppl rial suppliers.	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is		Aluminum Titanium (mg) Total	7429-60-5 7440-32-6 Total Solder Ball	69.20 30.80 100.00 % of Total Weight	
	stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verific hemical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for , ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemi protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. Dochip Technology Incorporated believes the informat original packing materials is true and correct to the l pleteness and accuracy of data in this form because I mation is often protected from disclosure as trade se pants, metals, and non-metal materials contained wi pochip Technology Incorporated does not provide any	b). ad via internal design controls, supplicher international substance is NOT an internation of the substance is NOT an internation of the substance is no credible reast any regulatory scheme world-wide. D flammability standard for plastics. Vicals/plastics/ inped are made from polyvinyl chlor best of its knowledge and belief, as it has been compiled based on the racerets and some information may no a parts and the average weight of ant this silicon devices (silicon IC) in the y warranty, express or implied, with r	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concern You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to ho ces restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technolog anges provided in Material Safety Data Sheets prov t have been provided by subcontract assemblers a ticipated significant toxic metals components. The e finished parts.	to the best o tration of the o obtain a tes o obtain a tes ld the packin corporated's y Incorporate ided by raw r nd raw mater se estimates ion. The exclu	of Microchip Te e chemical sub at report at ng slip on the of e semiconduct ed cannot gua material suppliers. do not include usive, limited	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is a trace levels product		Aluminum Titanium (mg) Total Tin	7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	69.20 30.80 100.00 % of Total Weight 98.50	
	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verific nemical substance is absent from the list above, the porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for <i>i</i> ing compounds used by Microchip meet the UL94 VG /ul.com/global/eng/pages/offerings/industries/chemi votective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. which prechnology Incorporated believes the informat original packing materials is true and correct to the l leteness and accuracy of data in this form because in mation is often protected from disclosure as trade se pants, metals, and non-metal materials contained with white provided by Microchip Technology Incorporatet does not provide any inties provided by Microchip Technology Incorporatet titons, sales order acknowledgement, and invoices.	b). ed via internal design controls, supplicher international substance is NOT an international substance is NOT an international endoted by the second s	lier declarations, and /or analytical test data. tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concern You can access the UL iQTM family of databases to ride (PVC) plastic. "Window envelopes" used to ho ces restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technolog anges provided in Material Safety Data Sheets prov t have been provided by subcontract assemblers a ticipated significant toxic metals components. The e finished parts. espect to the information provided in this declarat d in Microchip's standard terms and conditions of s rations and shall not be liable for any damages, dir	to the best o itration of the o obtain a tes o obtain a tes ld the packin acorporated's y Incorporate ided by raw n ind raw mater se estimates ion. The exclu- cale. These ar ect or indirec	of Microchip Te e chemical sub at report at ag slip on the of estimation of the semiconduct ed cannot gua material suppliers. do not include usive, limited re provided in ct, consequent	echnology pstance, if outer box and or devices in rantee the iers. Supplier Information is a trace levels product Microchip's tial or		Aluminum Titanium (mg) Total Tin Silver	7429-60-5 7440-32-6 Total Solder Ball 7440-31-5 7440-22-4	69.20 30.80 100.00 % of Total Weight 98.50 1.00	

Basic Substance CAS Number Sub-Co	ained In"		• • •	•					e1
	omponent	% I otal Weight	mg/part	ppm	0.47	(mg) Total	Backside Coating	% of Total Weight	7.35
	de Coating	4.153	0.268	41.528		Silica	Proprietary	56.5	
Epoxy Resin Proprietary Backsi	de Coating	1.551	0.100	15,509		Epoxy Resin	Proprietary	21.1	
	de Coating	1.551	0.100	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black Proprietary Backsi	de Coating	0.096	0.006	956		Carbon Black	Proprietary	1.3	
Organosilicate polymer Trade Secret PB0	O Layer	1.230	0.079	12,300			Total	100.00	4
Copper 7440-50-8 Under E	3ump Metal	0.212	0.014	2,120	0.08	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum 7429-90-5 Under E	Bump Metal	0.077	0.005	774		Organosilicate polymer	Trade Secret	100.00	
Nickel 7440-02-0 Under E	Bump Metal	0.042	0.003	421		· · · · · ·	Total	100.00	1
	Sump Metal	0.028	0.002	284	0.02	(mg) Total	Under Bump Metal	% of Total Weight	0.36
	ip (Die)	76.390	4.927	763,900		Copper	7440-50-8	58.90	
	bution Layer	0.152	0.010	1,522		Aluminum	7429-90-5	21.50	
	oution Layer	0.068	0.004	678		Nickel	7440-02-0	11.70	
Tin 7440-31-5 Soli	der Ball	14.233	0.918	142,333		Vanadium	7440-62-2	7.90	
Silver 7440-22-4 Sol	der Ball	0.145	0.009	1,445			Total	100.00	4
Copper 7440-50-8 Sol	der Ball	0.072	0.005	723	4.93	(mg) Total	Chip (Die)	% of Total Weight	76.39
	TOTALS:	100.000	6.450	1,000,000		Doped Silicon	7440-21-3	100	
0.00645 g Total Mass							Total	100.00	1
liance with the above EU Directives has been verified via internal design controls, supplier declarations, and emical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in t orated's knowledge and belief as of the date of this document, there is no credible reason to believe that the not below the threshold of regulatory concern for any regulatory scheme world-wide.	he semiconductor device and,					Aluminum	7429-60-5 7440-32-6	69.20 30.80	
ing compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the /ul.com/global/eng/pages/offerings/industries/chemicals/plastics/	UL iQTM family of databases to	o obtain a tes	t report at				Total	100.00	
protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "V ain "reels" may be made from PVC plastic.	Vindow envelopes" used to ho	old the packing	g slip on the o	outer box and	0.93	(mg) Total	Solder Ball	% of Total Weight	14.45
ochip Technology Incorporated believes the information in this form concerning substances restricted by Ro r original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in the pleteness and accuracy of data in this form because it has been compiled based on the ranges provided in Marmation is often protected from disclosure as trade secrets and some information may not have been provided vided only as estimates of the average weight of these parts and the average weight of anticipated significant opants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.	his form. Microchip Technolog aterial Safety Data Sheets prov d by subcontract assemblers a	y Incorporate vided by raw n and raw mater	ed cannot gua naterial suppl rial suppliers.	rantee the iers. Supplier Information is		Tin	7440-31-5	98.50	
opants, metals, and non-metal materials contained within sincon devices (sincon ic) in the minished parts.			usive limited	product					
parits, metals, and non-metal materials contained within sincon devices (sincon to) in the missined paris. ochip Technology Incorporated does not provide any warranty, express or implied, with respect to the inform anties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's stan ations, sales order acknowledgement, and invoices.						Silver	7440-22-4	1.00	
ochip Technology Incorporated does not provide any warranty, express or implied, with respect to the inform anties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's stan	dard terms and conditions of s	sale. These ar	e provided in t, consequent	Microchip's tial or		Silver	7440-22-4 7440-50-8	0.50	

Semiconductor Device Ty Basic Substance	ype: 25 WLCSP		-		•			ogeneous Materials: e.g. pc boards, display	/s)	JEDEC 97 Produ Marking and/o Pkg. Labeling e1
		. ,			-					
	CAS Number	"Contained In" Sub-Component	% I otal Weight	mg/part	ppm	0.69	(mg) Total	Backside Coating	% of Total Weight	7.35
	Proprietary	Backside Coating	4.153	0.392	41,528		Silica	a Proprietary	56.5	
Silica Epoxy Resin	Proprietary	Backside Coating	1.551	0.392	15,509		Epoxy Resir	n Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.147	15,509		Acrylic Resir	n Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.009	956		Carbon Black		1.3	
Organosilicate polymer	Trade Secret	PBO Laver	1.230	0.116	12.300		Carbon Diach	Total		l
Copper	7440-50-8	Under Bump Metal	0.212	0.020	2,120	0.12	(mg) Total	PBO Layer	% of Total Weight	
Aluminum	7429-90-5	Under Bump Metal	0.077	0.007	774	0.12	Organosilicate polymer		100.00	1.20
Nickel	7440-02-0	Under Bump Metal	0.042	0.004	421		Organosilicate polymen	Total		l
Vanadium	7440-62-0	Under Bump Metal	0.028	0.003	284	0.03	(mg) Total	Under Bump Metal	% of Total Weight	
Silicon	7440-02-2	Chip (Die)	76.390	7.219	763.900	0.03	Copper	7440-50-8	58.90	0.36
Aluminum	7429-60-5	Redistribution Laver	0.152	0.014	1.522		Aluminum	7440-50-8	21.50	
Titanium	7429-60-5	Redistribution Layer	0.068	0.014	678		Nickel	7429-90-5	21.50	
Tin	7440-31-5	Solder Ball	13.944	1.318	139,443		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.434	0.041	4,335		Vanadiam	Total		1
Copper	7440-50-8	Solder Ball	0.072	0.007	723	7.22	(mg) Total	Chip (Die)	% of Total Weight	76.39
Сорры	7440 00 0	TOTAL		9.450	1.000.000	1.22	Doped Silicon	7440-21-3	100	70.35
	0.00045	g Total Mass	3. 100.000	3.400	1,000,000		Doped Silicon	Total		
semiconductor device and its homogenous materials comp										
pliance with the above EU Directives has been verified via i hemical substance is absent from the list above, the chemi porated's knowledge and belief as of the date of this docur is not below the threshold of regulatory concern for any res	cal substance is NOT a nent, there is no credit	n intentional ingredient in the semiconductor device an le reason to believe that the unavoidable impurity conc					Aluminum	7429-60-5 7440-32-6	69.20 30.80	
the below the threshold of regulatory concern for any re- ding compounds used by Microchip meet the UL94 V0 flamn ://ul.com/global/eng/pages/offerings/industries/chemicals/pl	nability standard for pla		s to obtain a tes	t report at				Total	100.00	
protective "tubes" in which the specific product is shipped ain "reels" may be made from PVC plastic.	are made from polyvin	/I chloride (PVC) plastic. "Window envelopes" used to	hold the packin	g slip on the o	outer box and	1.37	(mg) Total	Solder Ball	% of Total Weight	14.45
rochip Technology Incorporated believes the information in r original packing materials is true and correct to the best of ppleteness and accuracy of data in this form because it has t	its knowledge and bel been compiled based o and some information	ief, as of the date listed in this form. Microchip Technolo n the ranges provided in Material Safety Data Sheets pr may not have been provided by subcontract assemblers	ogy Incorporate ovided by raw i s and raw mate	ed cannot gua naterial suppl rial suppliers.	rantee the iers. Supplier Information is		Tin	7440-31-5	96.50	
vided only as estimates of the average weight of these parts lopants, metals, and non-metal materials contained within si		;) in the finished parts.								
vided only as estimates of the average weight of these parts	licon devices (silicon le	, with respect to the information provided in this declar					Silver	7440-22-4	3.00	

	ce Type: 25 WLCSP (EU)		-				•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Prod Marking and/o Pkg. Labeling e1
Semiconductor Devic	e Type: 25 WECOF (EU)	"Contained In"	% I otal	1	-					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	maa	0.71	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4,153	0.400	41.528		Silica	Proprietary	56.5	1
Epoxy Resin	Proprietary	Backside Coating	1.551	0.149	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.149	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.009	956		Carbon Black	Proprietary	1.3	
Organosilicate polymer	Trade Secret	PBO Laver	1.230	0.118	12.300		Salbert Black	Total	100.00	L .
Copper	7440-50-8	Under Bump Metal	0.212	0.020	2,120	0.12	(mg) Total	PBO Laver	% of Total Weight	
Aluminum	7429-90-5	Under Bump Metal	0.077	0.007	774	0.12	Organosilicate polymer		100.00	1.25
Nickel	7440-02-0	Under Bump Metal	0.042	0.004	421		Organosilicate polymen	Total	100.00	l
Vanadium	7440-62-0	Under Bump Metal	0.042	0.004	284		()			
						0.03	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	7.356	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.015	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.007	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	13.800	1.329	137,998		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.578	0.056	5,780			Total	100.00	
Copper	7440-50-8	Solder Ball	0.072	0.007	723	7.36	(mg) Total	Chip (Die)	% of Total Weight	76.39
		TOTALS	100.000	9.630	1,000,000		Doped Silicon	7440-21-3	100	
	0.00963 g Tota									
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			IS Recast Dire	ective) and wit	th EU	0.02	(mg) Total	Redistribution Layer	% of Total Weight	0.22
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified nemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d	l via internal design controls, supplie hemical substance is NOT an intentic locument, there is no credible reasor	r declarations, and /or analytical test data.	, to the best c	of Microchip Te	echnology	0.02	(mg) Total Aluminum Titanium	Redistribution Layer 7429-60-5 7440-32-6	% of Total Weight 69.20 30.80	0.22
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ing compounds used by Microchip meet the UL94 V0 f /ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	l via internal design controls, supplie hemical substance is NOT an intentit locument, there is no credible reasor y regulatory scheme world-wide. 'llammability standard for plastics. Yo als/plastics/	r declarations, and /or analytical test data. onal ingredient in the semiconductor device and n to believe that the unavoidable impurity conce ou can access the UL iQTM family of databases t	, to the best o ntration of the o obtain a tes	of Microchip Te e chemical sub st report at	echnology bstance, if	0.02	Aluminum	7429-60-5	69.20	
a semiconductor device and its homogenous materials of ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verifies chemical substance is absent from the list above, the cl irporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. 	I via internal design controls, supplie hemical substance is NOT an intentit locument, there is no credible reason ny regulatory scheme world-wide. flammability standard for plastics. Yo als/plastics/ oped are made from polyvinyl chlorid on in this form concerning substance st of its knowledge and belief, as of has been compiled based on the ran rets and some information may not I parts and the average weight of antic	r declarations, and /or analytical test data. onal ingredient in the semiconductor device and to believe that the unavoidable impurity concer- ou can access the UL iQTM family of databases t le (PVC) plastic. "Window envelopes" used to he is restricted by RoHS in Microchip Technology I the date listed in this form. Microchip Technology I the date listed in the date	, to the best c ntration of the o obtain a tes old the packin ncorporated's yy Incorporate vided by raw i and raw mate	of Microchip Tr e chemical sut st report at ng slip on the o s semiconduct ed cannot gua material suppliers.	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is		Aluminum	7429-60-5 7440-32-6 Total	69.20 30.80 100.00	
stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ling compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemicz protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. oochip Technology Incorporated believes the informatio original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec	via internal design controls, supplie hemical substance is NOT an intentit locument, there is no credible reasor ny regulatory scheme world-wide. flammability standard for plastics. Yo als/plastics/ oped are made from polyvinyl chlorid on in this form concerning substance sto of its knowledge and belief, as of has been compiled based on the ran rets and some information may not b parts and the average weight of antic in silicon devices (silicon IC) in the f warranty, express or implied, with res	r declarations, and /or analytical test data. onal ingredient in the semiconductor device and to believe that the unavoidable impurity conce ou can access the UL iQTM family of databases t le (PVC) plastic. "Window envelopes" used to he is restricted by ROHS in Microchip Technology I the date listed in this form. Microchip Technolog ges provided in Material Safety Data Sheets pro nave been provided by subcontract assemblers : ipated significant toxic metals components. The inished parts.	, to the best of ntration of the o obtain a test old the packin ncorporated's gy Incorporate vided by raw i and raw mate se estimates tion. The excl	of Microchip Td e chemical sub st report at ng slip on the d s semiconduct ed cannot gua material suppli rial suppliers. do not include usive, limited	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	7429-60-5 7440-32-6 Total Solder Ball	69.20 30.80 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified nemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ing compounds used by Microchip meet the UL94 V0 f /ul.com/global/eng/pages/offerings/industries/chemics protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic. whip Technology Incorporated believes the information original packing materials is true and correct to the be- beteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec ded only as estimates of the average weight of these p pants, metals, and non-metal materials contained with which pTechnology Incorporated does not provide any w inties provided by Microchip Technology Incorporated	via internal design controls, supplie hemical substance is NOT an intentit locument, there is no credible reason ny regulatory scheme world-wide. flammability standard for plastics. Yo als/plastics/ opped are made from polyvinyl chlorid on in this form concerning substance est of its knowledge and belief, as of has been compiled based on the ran rets and some information may not I parts and the average weight of antic in silicon devices (silicon IC) in the f warranty, express or implied, with rest d and its subsidiaries are contained in changes to Material Content Declara he users' reliance on the information	r declarations, and /or analytical test data. onal ingredient in the semiconductor device and to believe that the unavoidable impurity conce- ou can access the UL iQTM family of databases t le (PVC) plastic. "Window envelopes" used to he as restricted by RoHS in Microchip Technology I the date listed in this form. Microchip Technology ges provided in Material Safety Data Sheets pro- nave been provided by subcontract assemblers - ipated significant toxic metals components. The inished parts. spect to the information provided in this declaran n Microchip's standard terms and conditions of tions and shall not be liable for any damages, di	, to the best of ntration of the o obtain a test old the packin vided by raw i and raw mate vise estimates tion. The excl sale. These an rect or indirect	of Microchip Tr e chemical sub st report at ng slip on the of s semiconduct ed cannot gua material suppliers. do not include usive, limited re provided in ct, consequent	echnology ostance, if outer box and ior devices in arantee the liers. Supplier Information is e trace levels product Microchip's tial or		Aluminum Titanium (mg) Total Tin	7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	69.20 30.80 100.00 % of Total Weight 95.50	

				attern (Grap				ogeneous Materials: e.g. pc boards, display	's)	JEDEC 97 Produ Marking and/or Pkg. Labeling e1
Semiconductor Devi	rice Type: 28 CSP (AD)			•••••						
		"Contained In"	% I otal			0.74	(mg) Total	Backside Coating	% of Total Weight	7.35
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm			9		
Silica	Proprietary	Backside Coating	4.153	0.417	41,528		Silica		56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.156	15,509		Epoxy Resir		21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.156	15,509		Acrylic Resir		21.1	
Carbon Black Organosilicate polymer	Proprietary Trade Secret	Backside Coating PBO Layer	0.096	0.010	956 12,300		Carbon Black	k Proprietary Total	1.3	
· · ·				0.123			· · - · ·			
Copper	7440-50-8	Under Bump Metal	0.212		2,120 774	0.12	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.008			Organosilicate polymer		100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.004	421			Total	100.00	
Vanadium	7440-62-2	Under Bump Metal	0.028	0.003	284	0.04	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	7.662	763,900	1	Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.015	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.007	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	14.233	1.428	142,333		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.145	0.014	1,445			Total		
Copper	7440-50-8	Solder Ball	0.072	0.007	723	7.66	(mg) Total	Chip (Die)	% of Total Weight	76.39
		тот	ALS: 100.000	10.030	1,000,000		Doped Silicon	7440-21-3	100	
	0.01003 g Tot	al Mass						Total	100.00	_
semiconductor device and its homogenous materials tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive		C (RoHS Directive), EU Directive 2011/65/EU	RoHS Recast Dire	ective) and wi	th EU	0.02	(mg) Total	Redistribution Layer	% of Total Weight	0.22
pliance with the above EU Directives has been verifie	d via internal design controls, suppli									ľ
	chemical substance is NOT an intenti	ional ingredient in the semiconductor device					Aluminum	7429-60-5	69.20	
rporated's knowledge and belief as of the date of this	chemical substance is NOT an intenti document, there is no credible reaso	ional ingredient in the semiconductor device					Aluminum	7429-60-5 7440-32-6	69.20 30.80	
rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0	chemical substance is NOT an intenti s document, there is no credible reaso any regulatory scheme world-wide. 0 flammability standard for plastics. Y	ional ingredient in the semiconductor device in to believe that the unavoidable impurity co	ncentration of the	e chemical sul						
rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ting compounds used by Microchip meet the UL94 VO //ul.com/global/eng/pages/offerings/industries/chemit protective "tubes" in which the specific product is sh	chemical substance is NOT an intenti s document, there is no credible reaso any regulatory scheme world-wide. 0 flammability standard for plastics. Y icals/plastics/	ional ingredient in the semiconductor device n to believe that the unavoidable impurity co ou can access the UL iQTM family of databa	ncentration of the	e chemical sul	bstance, if	1.45		7440-32-6	30.80	14.45
rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 J/ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sh ain "reels" may be made from PVC plastic. vochip Technology Incorporated believes the informati r original packing materials is true and correct to the b pleteness and accuracy of data in this form because i rmation is often protected from disclosure as trade se dided only as estimates of the average weight of these	chemical substance is NOT an intenti s document, there is no credible reaso any regulatory scheme world-wide. 0 flammability standard for plastics. Y icals/plastics/ nipped are made from polyvinyl chlori tion in this form concerning substanc best of its knowledge and belief, as of it has been compiled based on the rar ecrets and some information may not e parts and the average weight of anti-	ional ingredient in the semiconductor device in to believe that the unavoidable impurity co ou can access the UL iQTM family of databa de (PVC) plastic. "Window envelopes" used es restricted by RoHS in Microchip Technolo the date listed in this form. Microchip Technolo tages provided in Material Safety Data Sheets have been provided by subcontract assemb cipated significant toxic metals components	ncentration of the ses to obtain a tes to hold the packin gy Incorporated's ology Incorporate provided by raw i ers and raw mate	e chemical sul at report at ag slip on the semiconduci ed cannot gua material suppi rial suppilers.	bstance, if outer box and tor devices in arantee the liers. Supplier Information is	1.45	Titanium	7440-32-6 Total	30.80 100.00	14.45
chemical substance is absent from the list above, the or rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sh ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati r original packing materials is true and correct to the b pleteness and accuracy of data in this form because i rmation is often protected from disclosure as trade se vided only as estimates of the average weight of these opants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices.	chemical substance is NOT an intenti s document, there is no credible reaso any regulatory scheme world-wide. 0 flammability standard for plastics. Y icals/plastics/ hipped are made from polyvinyl chlori tion in this form concerning substanc best of its knowledge and belief, as of it has been compiled based on the ra ecrets and some information may not e parts and the average weight of anti- ithin silicon devices (silicon IC) in the y warranty, express or implied, with re	ional ingredient in the semiconductor device in to believe that the unavoidable impurity co ou can access the UL iQTM family of databa de (PVC) plastic. "Window envelopes" used es restricted by RoHS in Microchip Technolo the date listed in this form. Microchip Technolo inges provided in Material Safety Data Sheets have been provided by subcontract assemb cipated significant toxic metals components finished parts.	ncentration of the ses to obtain a tes to hold the packin gy Incorporated's ology Incorporate provided by raw i ers and raw mate These estimates laration. The excli	e chemical sul it report at ing slip on the of semiconduct ed cannot gua material suppi rial suppies do not includ usive, limited	bstance, if outer box and tor devices in arantee the liers. Supplier Information is e trace levels product	1.45	Titanium (mg) Total	7440-32-6 Total Solder Ball	30.80 100.00 % of Total Weight	14.45
rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informati original packing materials is true and correct to the b pleteness and accuracy of data in this form because i mation is often protected from disclosure as trade se opants, metals, and non-metal materials contained wit ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated	chemical substance is NOT an intenti s document, there is no credible reaso any regulatory scheme world-wide. O flammability standard for plastics. Y icals/plastics/ nipped are made from polyvinyl chlori- tion in this form concerning substanc- best of its knowledge and belief, as of it has been compiled based on the rar screts and some information may not e parts and the average weight of anti- ithin silicon devices (silicon IC) in the y warranty, express or implied, with re ed and its subsidiaries are contained or changes to Material Content Declara- t the users' reliance on the information	Ional ingredient in the semiconductor device in to believe that the unavoidable impurity co ou can access the UL iQTM family of databa de (PVC) plastic. "Window envelopes" used es restricted by RoHS in Microchip Technolo the date listed in this form. Microchip Technolo ges provided in Material Safety Data Sheets have been provided by subcontract assemb cipated significant toxic metals components finished parts. spect to the information provided in this dee in Microchip's standard terms and condition ations and shall not be liable for any damage	ncentration of the ses to obtain a tes to hold the packin gy Incorporated's ology Incorporated's provided by raw i ers and raw mate These estimates laration. The excli s of sale. These ar s, direct or indirect	e chemical sul at report at ag slip on the asemiconduct d cannot gua material suppliers. do not includ usive, limited re provided in ct, consequen	bstance, if outer box and tor devices in arantee the lifers. Supplier Information is e trace levels product Microchip's tial or	1.45	Titanium (mg) Total Tin	7440-32-6 Total Solder Ball 7440-31-5	30.80 100.00 % of Total Weight 98.50	14.45
porated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 VO /ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sh in "reels" may be made from PVC plastic. bothip Technology Incorporated believes the information original packing materials is true and correct to the be bleteness and accuracy of data in this form because i bleteness and accuracy of data in this form because i adion is often protected from disclosure as trade see ded only as estimates of the average weight of these pants, metals, and non-metal materials contained will bothip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporate tations, sales order acknowledgement, and invoices. bochip disclaims any duty to notify users of updates on wise, suffered by users or third parties as a result of	chemical substance is NOT an intenti s document, there is no credible reaso any regulatory scheme world-wide. O flammability standard for plastics. Y icals/plastics/ nipped are made from polyvinyl chlori- tion in this form concerning substanc- best of its knowledge and belief, as of it has been compiled based on the rar screts and some information may not e parts and the average weight of anti- ithin silicon devices (silicon IC) in the y warranty, express or implied, with re ed and its subsidiaries are contained or changes to Material Content Declara- t the users' reliance on the information	Ional ingredient in the semiconductor device in to believe that the unavoidable impurity co ou can access the UL iQTM family of databa de (PVC) plastic. "Window envelopes" used es restricted by RoHS in Microchip Technolo the date listed in this form. Microchip Technolo ges provided in Material Safety Data Sheets have been provided by subcontract assemb cipated significant toxic metals components finished parts. spect to the information provided in this dee in Microchip's standard terms and condition ations and shall not be liable for any damage	ncentration of the ses to obtain a tes to hold the packin gy Incorporated's ology Incorporated's provided by raw i ers and raw mate These estimates laration. The excli s of sale. These ar s, direct or indirect	e chemical sul at report at ag slip on the asemiconduct d cannot gua material suppliers. do not includ usive, limited re provided in ct, consequen	bstance, if outer box and tor devices in arantee the lifers. Supplier Information is e trace levels product Microchip's tial or	1.45	Titanium (mg) Total Tin Silver	7440-32-6 Total Solder Ball 7440-31-5 7440-22-4	30.80 100.00 % of Total Weight 98.50 1.00	

ICROCHIP Semiconductor Devi	:е Түре: 28 CSP (АН)		_				•	ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Pro Marking and Pkg. Labelir e1
Connectinadorer Deriv		"Contained In"	% I otal	T	1					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.74	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.421	41.528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.157	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.157	15.509		Acrylic Resin		21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.010	956		Carbon Black	Proprietary	1.3	
Organosilicate polymer	Trade Secret	PBO Laver	1.230	0.125	12.300			Total	100.00	8
Copper	7440-50-8	Under Bump Metal	0.212	0.021	2,120	0.12	(mg) Total	PBO Layer	% of Total Weight	
Aluminum	7429-90-5	Under Bump Metal	0.077	0.008	774	0.12	Organosilicate polymer	Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.004	421		organoomoato polymon	Total		l
Vanadium	7440-62-2	Under Bump Metal	0.042	0.003	284	0.04	(mg) Total	Under Bump Metal	% of Total Weight	
Silicon	7440-02-2	Chip (Die)	76.390	7.738	763.900	0.04	Copper	7440-50-8	58.90	0.30
Aluminum	7429-60-5	Redistribution Layer	0.152	0.015	1.522		Aluminum	7440-50-8 7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.013	678		Nickel	7440-02-0	11.70	
Tin	7440-32-0	Solder Ball	14.233	1.442	142,333		Vanadium	7440-62-0	7.90	
Silver	7440-22-4	Solder Ball	0.145	0.015	1,445		vanaulum	Total		1
Copper	7440-50-8	Solder Ball	0.072	0.007	723	7.74	(mg) Total	Chip (Die)	% of Total Weight	
Сорреі	7440-50-0	TOTAL		10.130	1.000.000	1.14		7440-21-3	100	76.39
		IUTAL	5: 100.000	10.130	1,000,000		Doped Silicon			
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive)		C (RoHS Directive), EU Directive 2011/65/EU (R	HS Recast Dire	ective) and wit	th EU	0.02	(mg) Total Aluminum	Total Redistribution Layer 7429-60-5	100.00 % of Total Weight 69.20	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive), iance with the above EU Directives has been verified emical substance is absent from the list above, the c orated's knowledge and belief as of the date of this d	comply with EU Directive 2002/95/EC via internal design controls, supplie hemical substance is NOT an intenti locument, there is no credible reaso	C (RoHS Directive), EU Directive 2011/65/EU (R er declarations, and /or analytical test data. onal ingredient in the semiconductor device ar	d, to the best c	of Microchip T	echnology	0.02	(0)	Redistribution Layer	% of Total Weight	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified enemical substance is absent from the list above, the c porated's knowledge and belief as of the date of this of not below the threshold of regulatory concern for an ng compounds used by Microchip meet the UL94 V0	comply with EU Directive 2002/95/EC via internal design controls, supplik hemical substance is NOT an intenti locument, there is no credible reaso y regulatory scheme world-wide. 'lammability standard for plastics. Yu	C (RoHS Directive), EU Directive 2011/65/EU (R er declarations, and /or analytical test data. onal ingredient in the semiconductor device an n to believe that the unavoidable impurity con	d, to the best of entration of the	of Microchip T e chemical sul	echnology	0.02	Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20 30.80	0.22
semiconductor device and its homogenous materials tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), bliance with the above EU Directives has been verified semical substance is absent from the list above, the c porated's knowledge and belief as of the date of this of s not below the threshold of regulatory concern for al ng compounds used by Microchip meet the UL94 V0 ful.com/global/eng/pages/offerings/industries/chemic rotective "tubes" in which the specific product is shi n "reels" may be made from PVC plastic.	comply with EU Directive 2002/95/EC via internal design controls, supplie hemical substance is NOT an intenti locument, there is no credible reaso ny regulatory scheme world-wide. lammability standard for plastics. Ye als/plastics/	C (RoHS Directive), EU Directive 2011/65/EU (R er declarations, and /or analytical test data. onal ingredient in the semiconductor device an n to believe that the unavoidable impurity com ou can access the UL iQTM family of database	d, to the best c entration of the to obtain a tes	of Microchip T e chemical sul st report at	echnology bstance, if	0.02	Aluminum	Redistribution Layer 7429-60-5 7440-32-6	% of Total Weight 69.20 30.80	0.22
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified memical substance is absent from the list above, the c porated's knowledge and belief as of the date of this of s not below the threshold of regulatory concern for an ng compounds used by Microchip meet the UL94 V0 'ul.com/global/eng/pages/offerings/industries/chemic rotective "tubes" in which the specific product is ship	comply with EU Directive 2002/95/EC via internal design controls, suppli- hemical substance is NOT an intenti locument, there is no credible reasony regulatory scheme world-wide. 'lammability standard for plastics. Yo als/plastics/ opped are made from polyvinyl chloric on in this form concerning substance to fits knowledge and belief, as of has been compiled based on the ran rets and some information may not parts and the average weight of antic	C (RoHS Directive), EU Directive 2011/65/EU (R er declarations, and /or analytical test data. onal ingredient in the semiconductor device an n to believe that the unavoidable impurity cond ou can access the UL iQTM family of database de (PVC) plastic. "Window envelopes" used to es restricted by RoHS in Microchip Technology the date listed in this form. Microchip Technology have been provided by subcontract assembler ipated significant toxic metals components. T	d, to the best of entration of the to obtain a test hold the packir Incorporated's ogy Incorporate ovided by raw and raw mate	of Microchip T e chemical sul st report at ng slip on the s semiconduci ed cannot gua material suppilers.	echnology bstance, if outer box and tor devices in rantee the liers. Supplier Information is		Aluminum	Redistribution Layer 7429-60-5 7440-32-6 Total	% of Total Weight 69.20 30.80 100.00	0.22
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified emical substance is absent from the list above, the c porated's knowledge and belief as of the date of this of s not below the threshold of regulatory concern for an ng compounds used by Microchip meet the UL94 V0 ul.com/global/eng/pages/offerings/industries/chemic rotective "tubes" in which the specific product is ship n "reels" may be made from PVC plastic. chip Technology Incorporated believes the informative roteing materials is true and correct to the be leteness and accuracy of data in this form because it nation is often protected from disclosure as trade sec	comply with EU Directive 2002/95/EC via internal design controls, supplik hemical substance is NOT an intenti locument, there is no credible reason y regulatory scheme world-wide. 'lammability standard for plastics. Yo als/plastics/ opped are made from polyvinyl chloric on in this form concerning substance of this knowledge and belief, as of has been compiled based on the ran rets and some information may not parts and the average weight of antic in silicon devices (silicon IC) in the varranty, express or implied, with re- I and its subsidiaries are contained i changes to Material Content Declara	C (RoHS Directive), EU Directive 2011/65/EU (R er declarations, and /or analytical test data. onal ingredient in the semiconductor device an n to believe that the unavoidable impurity con- ou can access the UL iQTM family of database de (PVC) plastic. "Window envelopes" used to es restricted by RoHS in Microchip Technology the date listed in this form. Microchip Technology ges provided in Material Safety Data Sheets pi have been provided by subcontract assembler ipated significant toxic metals components. T finished parts. spect to the information provided in this decla n Microchip's standard terms and conditions of titons and shall not be liable for any damages,	d, to the best of entration of the s to obtain a test hold the packin lncorporated's ogy Incorporate ovided by raw s and raw mate nese estimates ation. The excl f sale. These at direct or indirect	of Microchip T e chemical sul at report at ng slip on the ed cannot gua material suppliers. do not includ usive, limited re provided in ct, consequen	echnology bstance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product Microchip's tial or		Aluminum Titanium (mg) Total	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball	% of Total Weight 69.20 30.80 100.00 % of Total Weight	0.22

CSP

Ліскоснір			P.	attern (Grapi	,			ogeneous Materials: e.g. pc boards, display	ys)	JEDEC 97 Prod Marking and/ Pkg. Labeling e1
Semiconductor Devi	ce Type: 30 WLCSP (EV)									ei
		"Contained In"	% I otal							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.80	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.453	41,528		Silica	a Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.169	15,509		Epoxy Resir	n Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.169	15,509		Acrylic Resir	n Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.010	956		Carbon Black		1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.134	12,300			Total	100.00	
Copper	7440-50-8	Under Bump Metal	0.212	0.023	2,120	0.13	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.008	774		Organosilicate polymer	r Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.005	421			Total	100.00	
Vanadium	7440-62-2	Under Bump Metal	0.028	0.003	284	0.04	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	8.342	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.017	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.007	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	13.800	1.507	137,998		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.578	0.063	5,780			Total	100.00	
Copper	7440-50-8	Solder Ball	0.072	0.008	723	8.34	(mg) Total	Chip (Die)	% of Total Weight	76.39
		TOTALS	: 100.000	10.920	1,000,000		Doped Silicon	7440-21-3	100	
	0.01092 g Tot	al Mass						Total	100.00	-
			HS Recast Dire	ective) and wit	th EU	0.02	(mg) Total	Redistribution Layer	% of Total Weight	0.22
s semiconductor device and its homogenous materials ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) npliance with the above EU Directives has been verified		C (RoHS Directive), EU Directive 2011/65/EU (Ro	IS Recast Dire	ective) and wit	th EU	0.02	(mg) Total Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20	0.22
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) apliance with the above EU Directives has been verifier chemical substance is absent from the list above, the c approached's knowledge and belief as of the date of this of	d via internal design controls, suppli themical substance is NOT an intent document, there is no credible reaso	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. onal ingredient in the semiconductor device and	I, to the best o	of Microchip To	echnology	0.02	,	7429-60-5	69.20 30.80	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this 4 , is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 b://ul.com/global/eng/pages/offerings/industries/chemic	d via internal design controls, suppli hemical substance is NOT an intent document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. onal ingredient in the semiconductor device and n to believe that the unavoidable impurity conce ou can access the UL iQTM family of databases	I, to the best o intration of the to obtain a tes	of Microchip To e chemical sub st report at	echnology ostance, if	0.02	Aluminum	7429-60-5	69.20 30.80	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	d via internal design controls, suppli hemical substance is NOT an intent document, there is no credible reaso ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. onal ingredient in the semiconductor device and n to believe that the unavoidable impurity conce ou can access the UL iQTM family of databases	I, to the best o intration of the to obtain a tes	of Microchip To e chemical sub st report at	echnology ostance, if	0.02	Aluminum	7429-60-5	69.20 30.80	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this of , is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 o://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi	I via internal design controls, suppli hemical substance is NOT an intent document, there is no credible reasc ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substanc est of its knowledge and belief, as of has been compiled based on the ra crets and some information may not parts and the average weight of anti	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. onal ingredient in the semiconductor device and n to believe that the unavoidable impurity conce ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to h es restricted by RoHS in Microchip Technology the date listed in this form. Microchip Technology the date listed in this form. Microchip Technology have been provided by subcontract assemblers cipated significant toxic metals components. Th	I, to the best o intration of the to obtain a tes old the packin incorporated's gy Incorporate vided by raw r and raw matei	of Microchip Tr e chemical sub st report at ng slip on the o s semiconduct ed cannot gua material suppliers.	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is		Aluminum	7429-60-5 7440-32-6 Total	69.20 30.80 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the c orporated's knowledge and belief as of the date of this is , is not below the threshold of regulatory concern for a iding compounds used by Microchip meet the UL94 V0 c//ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is shi tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatili rorginal packing materials is true and correct to the b npleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these	I via internal design controls, suppli hemical substance is NOT an intent document, there is no credible reasc ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substanc est of its knowledge and belief, as o has been compiled based on the rais crets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. onal ingredient in the semiconductor device and n to believe that the unavoidable impurity conce ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to h es restricted by RoHS in Microchip Technology the date listed in this form. Microchip Technology the date listed in this form. Microchip Technology have been provided by subcontract assemblers cipated significant toxic metals components. Th finished parts.	I, to the best o intration of the to obtain a tes old the packin incorporated's gy Incorporate vided by raw r and raw mate ese estimates tion. The exclu	of Microchip Tri e chemical sub st report at ng slip on the o s semiconduct ed cannot gua material suppliers. do not includo usive, limited	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	7429-60-5 7440-32-6 Total Solder Ball	69.20 30.80 100.00 % of Total Weight	
cctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c proprated's knowledge and belief as of the date of this is is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatir r original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade servided only as estimates of the average weight of these opants, metals, and non-metal materials contained with rochip Technology Incorporated does not provide any ' ranties provided by Microchip Technology Incorporate	d via internal design controls, suppli hemical substance is NOT an intent document, there is no credible rease ny regulatory scheme world-wide. flammability standard for plastics. Y als/plastics/ pped are made from polyvinyl chlori on in this form concerning substance est of its knowledge and belief, as o has been compiled based on the rai rets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the warranty, express or implied, with re d and its subsidiaries are contained changes to Material Content Declar.	C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. onal ingredient in the semiconductor device and n to believe that the unavoidable impurity conce ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to h es restricted by RoHS in Microchip Technology the date listed in this form. Microchip Technology the date listed in this declaration provided in this declaration the microchip's standard terms and conditions of ations and shall not be liable for any damages, d	I, to the best o nntration of the to obtain a tes old the packin ncorporated's gy Incorporate vided by raw r and raw mate ese estimates tion. The exclu sale. These ar irect or indirect	of Microchip Tr e chemical sub st report at ng slip on the e s semiconduct ed cannot gua material suppliers. do not includ do not includ usive, limited re provided in ct, consequen	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product Microchip's tial or		Aluminum Titanium (mg) Total	7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	69.20 30.80 100.00 % of Total Weight 95.50	

Semiconductor Device Type	• 30 WI CSP	/FW)	P	attern (Grap	hic)			ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Produ Marking and/o Pkg. Labeling e1
Semiconductor Device Type	. 50 WECOI	"Contained In"	% I otal	1	-			1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.92	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.521	41.528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.194	15,509		Epoxy Resin		21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.194	15,509		Acrylic Resin		21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.012	956		Carbon Black		1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.154	12,300			Total	100.00	
Copper	7440-50-8	Under Bump Metal	0.212	0.027	2,120	0.15	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.010	774		Organosilicate polymer	Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.005	421			Total	100.00	1
Vanadium	7440-62-2	Under Bump Metal	0.028	0.004	284	0.05	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	9.579	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.019	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.008	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	13.800	1.730	137,998		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.578	0.072	5.780			Total	100.00	1
Copper	7440-50-8	Solder Ball	0.072	0.009	723	9.58	(mg) Total	Chip (Die)	% of Total Weight	76.39
		TOTALS:	100.000	12.540	1.000.000		Doped Silicon	7440-21-3	100	
	0 01254	g Total Mass			,,			Total	100.00	1
miconductor device and its homogenous materials comply w										
			S Pocaet Dire	active) and wit	b Ell					
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via intern	nal design controls	s, supplier declarations, and /or analytical test data.		ŗ	-	0.03	(mg) Total	Redistribution Layer 7429-60-5	% of Total Weight 69.20	0.22
re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via intern mical substance is absent from the list above, the chemical s orated's knowledge and belief as of the date of this document not below the threshold of regulatory concern for any regulat	nal design controls ubstance is NOT a , there is no credib ory scheme world-	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide.	to the best o stration of the	of Microchip T e chemical sul	echnology	0.03		7429-60-5 7440-32-6	69.20 30.80	0.22
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via interi emical substance is absent from the list above, the chemical s orated's knowledge and belief as of the date of this document not below the threshold of regulatory concern for any regulating g compounds used by Microchip meet the UL94 V0 flammabil	nal design controls ubstance is NOT a , there is no credib ory scheme world- ity standard for pla	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide.	to the best o stration of the	of Microchip T e chemical sul	echnology	0.03	Aluminum	7429-60-5	69.20	0.22
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified via intern mical substance is absent from the list above, the chemical s orated's knowledge and belief as of the date of this document not below the threshold of regulatory concern for any regulat g compounds used by Microchip meet the UL94 V0 flammabil Loom/global/eng/pages/offerings/industries/chemicals/plastic bective "tubes" in which the specific product is shipped are r	nal design controls ubstance is NOT a , there is no credib ory scheme world- ity standard for pla s/	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. astics. You can access the UL iQTM family of databases to	to the best o atration of the p obtain a tes	of Microchip T e chemical sul st report at	echnology ostance, if	0.03	Aluminum	7429-60-5 7440-32-6	69.20 30.80	0.22
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified via intern emical substance is absent from the list above, the chemical s borated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regulat ng compounds used by Microchip meet the UL94 V0 flammabil ul.com/global/eng/pages/offerings/industries/chemicals/plastic rotective "tubes" in which the specific product is shipped are r n "reeis" may be made from PVC plastic. chip Technology Incorporated believes the information in this riginal packing materials is true and correct to the best of its b leteness and accuracy of data in this form because it has been ration is often protected from disclosure as trade secrets and bed ony as estimates of the average weight of these parts and bants, metals, and non-metal materials contained within silicor	nal design controls ubstance is NOT a , there is no credition ory scheme world ity standard for pla- ss/ nade from polyvin form concerning s inowledge and bell compiled based o some information i the average weigh	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In fer, as of the date listed in this form. Microchip Technology n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The	to the best o ntration of the o obtain a tes old the packin acorporated's y Incorporate ided by raw i ind raw mate	of Microchip T e chemical sul it report at g slip on the s semiconduci ed cannot gua material suppi rial suppilers.	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is		Aluminum	7429-60-5 7440-32-6 Total	69.20 30.80 100.00	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iance with the above EU Directives has been verified via intern mical substance is absent from the list above, the chemical s orated's knowledge and belief as of the date of this document not below the threshold of regulatory concern for any regulat g compounds used by Microchip meet the UL94 V0 flammabil I.com/global/eng/pages/offerings/industries/chemicals/plastic otective "tubes" in which the specific product is shipped are r "reels" may be made from PVC plastic. hip Technology Incorporated believes the information in this riginal packing materials is true and correct to the best of its k steness and accuracy of data in this form because it has been atton is often protected from disclosure as trade secrets and ed only as estimates of the average weight of these parts and ants, metals, and non-metal materials contained within silicor hip Technology Incorporated does not provide any warranty, ties provided by Microchip Technology Incorporated and its s	nal design controls ubstance is NOT a , there is no credition ory scheme world- ity standard for pla- ss/ nade from polyvin form concerning s inowledge and bell compiled based o some information i the average weigh o devices (silicon 10 express or implied	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concen- wide. astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ef, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts.	to the best o htration of the o obtain a tes old the packin accorporated's y Incorporate ided by raw in and raw mate se estimates	of Microchip T e chemical sul at report at ng slip on the e semiconduci ed cannot gua material suppliers. do not includ usive, limited	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	7429-60-5 7440-32-6 Total Solder Ball	69.20 30.80 100.00 % of Total Weight	
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ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iance with the above EU Directives has been verified via intern mical substance is absent from the list above, the chemical s orated's knowledge and belief as of the date of this document not below the threshold of regulatory concern for any regulat g compounds used by Microchip meet the UL94 V0 flammabil Lcom/global/eng/pages/offerings/industries/chemicals/plastic the "tubes" in which the specific product is shipped are r "reels" may be made from PVC plastic. hip Technology Incorporated believes the information in this iginal packing materials is true and correct to the best of its is teness and accuracy of data in this form because it has been ation is often protected from disclosure as trade secrets and aton, metals, and non-metal materials contained within silicor hip Technology Incorporated does not provide any warranty, ties provided by Microchip Technology Incorporated and its sons, sales order acknowledgement, and invoices. hip disclaims any duty to notify users of updates or changes ise, suffered by users or third parties as a result of the users?	hal design controls ubstance is NOT a , there is no credib ory scheme world- ity standard for pla- is/ nade from polyvin form concerning s inowledge and bell compiled based o some information i the average weigh o devices (silicon IC express or implied subsidiaries are co to Material Conten	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer wide. Isstics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho ubstances restricted by RoHS in Microchip Technology In ef, as of the date listed in this form. Microchip Technology In n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a t of anticipated significant toxic metals components. The C) in the finished parts. , with respect to the information provided in this declarati ntained in Microchip's standard terms and conditions of s	to the best o htration of the b obtain a tes od the packin hcorporated's y Incorporate ided by raw in ind raw mate se estimates ion. The exclu- sale. These ar ect or indirect	of Microchip T e chemical sul at report at g slip on the a semiconduci d cannot gua material suppi rial suppiliers. do not includ usive, limited re provided in ct, consequen	echnology sstance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product Microchip's tial or		Aluminum Titanium (mg) Total Tin Silver	7429-60-5 7440-32-6 Total Solder Ball 7440-31-5 7440-22-4	69.20 30.80 100.00 % of Total Weight 95.50 4.00	

Semiconductor Devic	ce Type: 32 CSP (AR)			attern (Grapi	nic)			ogeneous Materials: .g. pc boards, display	ys)	JEDEC 97 Prod Marking and/c Pkg. Labeling e1
		"Contained In"	% I otal	1	r i	0.93	(mg) Total	Backside Coating	% of Total Weight	7.35
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0.93	(mg) i otai	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4.153	0.524	41,528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.196	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.196	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.012	956		Carbon Black		1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.155	12,300			Total		
Copper	7440-50-8	Under Bump Metal	0.212	0.027	2,120	0.16	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.010	774		Organosilicate polymer	Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.005	421			Total	100.00	-
Vanadium	7440-62-2	Under Bump Metal	0.028	0.004	284	0.05	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	9.633	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.019	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.009	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	14.233	1.795	142,333		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.145	0.018	1,445			Total	100.00	
Copper	7440-50-8	Solder Ball	0.072	0.009	723	9.63	(mg) Total	Chip (Die)	% of Total Weight	76.39
		TOTALS	100.000	12.610	1,000,000		Doped Silicon	7440-21-3	100	
	0.01261 g Tota	al Mass						Total	100.00	
	comply with EU Directive 2002/95/EC		IS Recast Dire	ective) and wi	h EU	0.03	(mg) Total	Redistribution Layer	% of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), pliance with the above EU Directives has been verified nemical substance is absent from the list above, the c porated's knowledge and belief as of the date of this of	comply with EU Directive 2002/95/EC via internal design controls, supplie hemical substance is NOT an intenti locument, there is no credible reason	C (RoHS Directive), EU Directive 2011/65/EU (Roh er declarations, and /or analytical test data. onal ingredient in the semiconductor device and	, to the best o	of Microchip T	echnology	0.03	(mg) Total Aluminum Titanium		1	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), pliance with the above EU Directives has been verified hemical substance is absent from the list above, the c porated's knowledge and belief as of the date of this c is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic	comply with EU Directive 2002/95/EC via internal design controls, supplie hemical substance is NOT an intenti locument, there is no credible reaso y regulatory scheme world-wide. lammability standard for plastics. Ye als/plastics/	C (RoHS Directive), EU Directive 2011/65/EU (Roh er declarations, and /or analytical test data. onal ingredient in the semiconductor device and n to believe that the unavoidable impurity conce bu can access the UL iQTM family of databases t	, to the best o ntration of the o obtain a tes	of Microchip T e chemical sul st report at	echnology ostance, if		Aluminum	Redistribution Layer 7429-60-5 7440-32-6 Total	% of Total Weight 69.20 30.80 100.00	. 0.22
semiconductor device and its homogenous materials tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the c rporated's knowledge and belief as of the date of this of is not below the threshold of regulatory concern for at ling compounds used by Microchip meet the UL94 V0 i //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic.	comply with EU Directive 2002/95/EC via internal design controls, supplie hemical substance is NOT an intenti locument, there is no credible reaso y regulatory scheme world-wide. lammability standard for plastics. Ye als/plastics/	C (RoHS Directive), EU Directive 2011/65/EU (Roh er declarations, and /or analytical test data. onal ingredient in the semiconductor device and n to believe that the unavoidable impurity conce bu can access the UL iQTM family of databases t	, to the best o ntration of the o obtain a tes	of Microchip T e chemical sul st report at	echnology ostance, if	0.03	Aluminum	Redistribution Layer 7429-60-5 7440-32-6	% of Total Weight 69.20 30.80	0.22
stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified hemical substance is absent from the list above, the c porated's knowledge and belief as of the date of this c is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 i //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship	comply with EU Directive 2002/95/EC via internal design controls, supplie hemical substance is NOT an intenti- locument, there is no credible reason y regulatory scheme world-wide. 'lammability standard for plastics. Yo als/plastics/ opped are made from polyvinyl chloric on in this form concerning substance est of its knowledge and belief, as of has been compiled based on the ran rets and some information may not i oarts and the average weight of antic	C (RoHS Directive), EU Directive 2011/65/EU (Roh er declarations, and /or analytical test data. onal ingredient in the semiconductor device and n to believe that the unavoidable impurity conce ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to h es restricted by RoHS in Microchip Technology I the date listed in this form. Microchip Technology ges provided in Material Safety Data Sheets pro have been provided by subcontract assemblers ipated significant toxic metals components. The	, to the best o ntration of the o obtain a tes old the packin ncorporated's gy Incorporate vided by raw i and raw mate	of Microchip T e chemical sul st report at ng slip on the s semiconduct ed cannot gua material suppi rial suppilers.	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is		Aluminum	Redistribution Layer 7429-60-5 7440-32-6 Total	% of Total Weight 69.20 30.80 100.00	0.22
stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), pliance with the above EU Directives has been verified hemical substance is absent from the list above, the c porated's knowledge and belief as of the date of this c is not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 1/ //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi jin "reels" may be made from PVC plastic. oochip Technology Incorporated believes the informatic original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec	comply with EU Directive 2002/95/EC i via internal design controls, supplie hemical substance is NOT an intenti locument, there is no credible reason y regulatory scheme world-wide. 'lammability standard for plastics. Yo als/plastics/ oped are made from polyvinyl chloric on in this form concerning substance has been compiled based on the ran rets and some information may not arts and the average weight of antic in silicon devices (silicon IC) in the varranty, express or implied, with rei	C (RoHS Directive), EU Directive 2011/65/EU (Roh er declarations, and /or analytical test data. onal ingredient in the semiconductor device and n to believe that the unavoidable impurity conce ou can access the UL iQTM family of databases i de (PVC) plastic. "Window envelopes" used to h es restricted by RoHS in Microchip Technology I the date listed in this form. Microchip Technology I the date listed in Material Safety Data Sheets pro have been provided by subcontract assemblers ipated significant toxic metals components. The finished parts.	, to the best o ntration of the o obtain a tes old the packin ncorporated's yy Incorporate vided by raw n and raw mate sse estimates tion. The excli	of Microchip Tr e chemical sul st report at ng slip on the o s semiconduci ed cannot gua material suppliers. do not includ usive, limited	echnology sstance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball	% of Total Weight 69.20 30.80 100.00 % of Total Weight	0.22
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AICROCHIP Semiconductor Devi	ice Type: 44 CSP (AQ)		P	attern (Grapl				ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Prod Marking and/o Pkg. Labeling e1
		"Contained In"	% I otal			1.00	(mg) Total	Backside Coating	% of Total Weight	7.35
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm					
Silica	Proprietary	Backside Coating	4.153	0.564	41,528		Silica	Proprietary	56.5	
Epoxy Resin Acrylic Resin	Proprietary Proprietary	Backside Coating Backside Coating	1.551 1.551	0.211	15,509 15,509		Epoxy Resin	Proprietary	21.1 21.1	
Carbon Black	Proprietary	Backside Coaling	0.096	0.211	956		Acrylic Resin Carbon Black	Proprietary Proprietary	21.1	
Organosilicate polymer	Trade Secret	PBO Laver	1.230	0.167	12.300		Calbori Black	Total		1
Copper	7440-50-8	Under Bump Metal	0.212	0.029	2,120	0.17	(mg) Total	PBO Layer	% of Total Weight	
Aluminum	7429-90-5	Under Bump Metal	0.212	0.029	774	0.17	Organosilicate polymer	Trade Secret	100.00	1.23
Nickel	7429-90-5	Under Bump Metal	0.077	0.006	421		Organosilicate polymer			<u>I</u>
							() -	Total		
Vanadium Silicon	7440-62-2	Under Bump Metal	0.028	0.004	284	0.05	(mg) Total	Under Bump Metal	% of Total Weight	0.36
-	7440-21-3	Chip (Die)	76.390	10.374 0.021	763,900		Copper	7440-50-8 7429-90-5	58.90 21.50	-
Aluminum Titanium	7429-60-5 7440-32-6	Redistribution Layer Redistribution Layer	0.152 0.068	0.021	1,522 678		Aluminum Nickel	7429-90-5 7440-02-0	21.50 11.70	-
Tin	7440-32-0	Solder Ball	14.233	1.933	142,333		Vanadium	7440-02-0	7.90	
Silver	7440-21-3	Solder Ball	0.145	0.020	1.445		Variadium	Total		1
Copper	7440-52-4 7440-50-8	Solder Ball	0.145	0.020	723	10.37	(mg) Total	Chip (Die)	% of Total Weight	
Copper	7440-50-8	TOTALS:		13.580	1.000.000	10.37				76.39
	0.01358 g Tota		100.000	13.580	1,000,000		Doped Silicon	7440-21-3 Total	100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verifie). ed via internal design controls, supplie	· •		,	•	0.03	(mg) Total	Redistribution Layer 7429-60-5	% of Total Weight	0.22
ttive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the e porated's knowledge and belief as of the date of this). ed via internal design controls, supplie chemical substance is NOT an intenti document, there is no credible reaso	er declarations, and /or analytical test data.	to the best o	of Microchip To	echnology	0.03	,	7429-60-5 7440-32-6	69.20 30.80	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the e rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic). ed via internal design controls, supplied chemical substance is NOT an intention document, there is no credible reason any regulatory scheme world-wide. flammability standard for plastics. Yo cals/plastics/	or declarations, and /or analytical test data. Deal ingredient in the semiconductor device and, to believe that the unavoidable impurity concer bu can access the UL iQTM family of databases to	to the best o atration of the p obtain a tes	of Microchip Tr e chemical sul st report at	echnology ostance, if	0.03	Aluminum	7429-60-5	69.20 30.80	
Stive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) upliance with the above EU Directives has been verifie themical substance is absent from the list above, the of rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic.). ed via internal design controls, supplied chemical substance is NOT an intention document, there is no credible reason any regulatory scheme world-wide. flammability standard for plastics. Yo cals/plastics/	or declarations, and /or analytical test data. Deal ingredient in the semiconductor device and, to believe that the unavoidable impurity concer bu can access the UL iQTM family of databases to	to the best o atration of the p obtain a tes	of Microchip Tr e chemical sul st report at	echnology ostance, if	0.03	Aluminum	7429-60-5 7440-32-6	69.20 30.80	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) opliance with the above EU Directives has been verifie chemical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 VO //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi). In the second sec	or declarations, and /or analytical test data. onal ingredient in the semiconductor device and, in to believe that the unavoidable impurity concern ou can access the UL iQTM family of databases to le (PVC) plastic. "Window envelopes" used to ho es restricted by RoHS in Microchip Technology In the date listed in this form. Microchip Technology ges provided in Material Safety Data Sheets prov have been provided by subcontract assemblers a ipated significant toxic metals components. The	to the best o tration of the o obtain a tes old the packin acorporated's y Incorporate ided by raw f	of Microchip To e chemical sub st report at ng slip on the o s semiconduct ed cannot gua material suppliers.	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is		Aluminum Titanium	7429-60-5 7440-32-6 Total	69.20 30.80 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ppliance with the above EU Directives has been verifie hemical substance is absent from the list above, the e rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informati original packing materials is true and correct to the b pleteness and accuracy of data in this form because in mation is often protected from disclosure as trade se dided only as estimates of the average weight of these). dv via internal design controls, supplied chemical substance is NOT an intenti document, there is no credible reaso any regulatory scheme world-wide. I flammability standard for plastics. Yo cals/plastics/ ipped are made from polyvinyl chlorid ion in this form concerning substance best of its knowledge and belief, as of it has been compiled based on the ran excrets and some information may not i parts and the average weight of antit thin silicon devices (silicon IC) in the warranty, express or implied, with rei- sent and the rest of the substance of the substance warranty, express or implied, with rei- sent and the substance of the substa	or declarations, and /or analytical test data. onal ingredient in the semiconductor device and, in to believe that the unavoidable impurity concer- bu can access the UL iQTM family of databases to be (PVC) plastic. "Window envelopes" used to ho the date listed in this form. Microchip Technology In the date listed in this form. Microchip Technology seprovided in Material Safety Data Sheets prov have been provided by subcontract assemblers a lipated significant toxic metals components. The linished parts. spect to the information provided in this declarati	to the best o attration of the pobtain a tes old the packin accorporated's y Incorporate ided by raw r and raw mate se estimates ion. The exclu	of Microchip Tr e chemical sub st report at ng slip on the o es semiconduct ed cannot gua material suppliers. do not includo usive, limited	echnology bostance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	7429-60-5 7440-32-6 Total Solder Ball	69.20 30.80 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles" (ELV) Directive) ppliance with the above EU Directives has been verifie chemical substance is absent from the list above, the of prorated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 cl/ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informati original packing materials is true and correct to the b pleteness and accuracy of data in this form because in irmation is often protected from disclosure as trade se- rided only as estimates of the average weight of these popants, metals, and non-metal materials contained wil ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated does not provide any and and an antipactive and and and and and and does not provide any and and and and and and and and and and). dv via internal design controls, supplied chemical substance is NOT an intenti document, there is no credible reaso any regulatory scheme world-wide. I flammability standard for plastics. Ye cals/plastics/ ipped are made from polyvinyl chlorid ion in this form concerning substance best of its knowledge and belief, as of it has been compiled based on the ran screts and some information may not i parts and the average weight of antic thin silicon devices (silicon IC) in the warranty, express or implied, with rei and and its subsidiaries are contained i r changes to Material Content Declara the users' reliance on the information	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, in to believe that the unavoidable impurity concern ou can access the UL iQTM family of databases to the cate listed in this form. Microchip Technology Im the date listed in this form. Microchip Technology Im the date listed in this form. Microchip Technology ges provided in Material Safety Data Sheets prov have been provided by subcontract assemblers a sipated significant toxic metals components. The finished parts. spect to the information provided in this declarati n Microchip's standard terms and conditions of s tions and shall not be liable for any damages, dir	to the best o htration of the o obtain a tes old the packin acorporated's y Incorporate ided by raw r ind raw mater se estimates ion. The exclu- sale. These ar ect or indirect	of Microchip Tr e chemical sub st report at ng slip on the e s semiconduct ed cannot gua material suppliers. do not includ usive, limited re provided in ct, consequen	echnology ostance, if outer box and tor devices in rantee the liers. Supplier Information is e trace levels product Microchip's tial or		Aluminum Titanium (mg) Total Tin	7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	69.20 30.80 100.00 % of Total Weight 98.50	
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	:е Туре: 48 CSP (АК)			attern (Grapi	nic)			ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Prod Marking and/c Pkg. Labeling e1
		"Contained In"	% I otal			1.04	(mg) Total	Backside Coating	% of Total Weight	7.35
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1.04		5		7.55
Silica	Proprietary	Backside Coating	4.153	0.587	41,528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.219	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin Carbon Black	Proprietary	Backside Coating	1.551 0.096	0.219	15,509 956		Acrylic Resin	Proprietary	21.1	
Organosilicate polymer	Proprietary Trade Secret	Backside Coating PBO Layer	1.230	0.174	12,300		Carbon Black	Proprietary Total	1.3	l
Copper	7440-50-8	Under Bump Metal	0.212	0.030	2.120	0.17	(PBO Laver	% of Total Weight	1.23
Aluminum	7440-50-8		0.212	0.030	2,120	0.17	(mg) Total			1.23
	7429-90-5	Under Bump Metal		0.011	421		Organosilicate polymer	Trade Secret	100.00	
Nickel	7440-02-0 7440-62-2	Under Bump Metal	0.042	0.006	421 284	0.05	()= ()	Total	100.00	
Vanadium		Under Bump Metal				0.05	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	10.802	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.022	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer Solder Ball	0.068	0.010	678		Nickel	7440-02-0 7440-62-2	11.70	
Tin	7440-31-5				140,888		Vanadium		7.90	
Silver	7440-22-4	Solder Ball	0.289	0.041	2,890		· · · · ·	Total		
Copper	7440-50-8	Solder Ball	0.072	0.010	723	10.80	(mg) Total	Chip (Die)	% of Total Weight	76.39
	0.01414 g Tot	TOTALS:	100.000	14.140	1,000,000		Doped Silicon	7440-21-3 Total	100 100.00	
				ective) and wit		0.03	(mg) Total Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20	0.22
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar	via internal design controls, suppli hemical substance is NOT an intenti locument, there is no credible reaso ny regulatory scheme world-wide.	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concen	to the best o tration of the	of Microchip Te e chemical sub	echnology	0.03		7429-60-5 7440-32-6	69.20 30.80	0.22
pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cl porated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ing compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica	via internal design controls, suppli hemical substance is NOT an intenti locument, there is no credible reaso ny regulatory scheme world-wide. 'lammability standard for plastics. Y als/plastics/	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concen ou can access the UL iQTM family of databases to	to the best o tration of the p obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if	0.03	Aluminum	7429-60-5	69.20	0.22
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Ipliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl is not below the threshold of regulatory concern for ar sing compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic.	via internal design controls, suppli hemical substance is NOT an intenti locument, there is no credible reaso ny regulatory scheme world-wide. 'lammability standard for plastics. Y als/plastics/	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concen ou can access the UL iQTM family of databases to	to the best o tration of the p obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if	2.04	Aluminum	7429-60-5 7440-32-6	69.20 30.80	0.22
pliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	I via internal design controls, suppli hemical substance is NOT an intenti locument, there is no credible reaso y regulatory scheme world-wide. 'lammability standard for plastics. Y als/plastics/ opped are made from polyvinyl chlori on in this form concerning substance to f its knowledge and belief, as of has been compiled based on the rar rets and some information may not parts and the average weight of anti-	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concen ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to ho es restricted by RoHS in Microchip Technology In the date listed in this form. Microchip Technology ges provided in Material Safety Data Sheets prov have been provided by subcontract assemblers a cipated significant toxic metals components. Thes	to the best o stration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw i nd raw mate	of Microchip Tr e chemical sut it report at g slip on the o s semiconduct ed cannot gua material suppliers.	achnology sstance, if outer box and or devices in rantee the iers. Supplier Information is		Aluminum Titanium	7429-60-5 7440-32-6 Total	69.20 30.80 100.00	
pliance with the above EU Directives has been verified chemical substance is absent from the list above, the cl rporated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the informatic original packing materials is true and correct to the be pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade sec ided only as estimates of the average weight of these p	I via internal design controls, suppli hemical substance is NOT an intenti locument, there is no credible reaso ny regulatory scheme world-wide. lammability standard for plastics. Y als/plastics/ oped are made from polyvinyl chlori oper and the scheme scheme scheme stof its knowledge and belief, as of has been compiled based on the rar rets and some information may not parts and the average weight of anti- ni silicon devices (silicon IC) in the varranty, express or implied, with re	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concen ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to ho es restricted by RoHS in Microchip Technology In the date listed in this form. Microchip Technology ges provided in Material Safety Data Sheets prov have been provided by subcontract assemblers a cipated significant toxic metals components. The finished parts.	to the best o tration of the o obtain a tes ld the packin corporated's y Incorporate ided by raw in nd raw mate se estimates	of Microchip Te e chemical sub it report at ig slip on the o s semiconduct ed cannot gua material suppliers. do not include usive, limited	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	7429-60-5 7440-32-6 Total Solder Ball	69.20 30.80 100.00 % of Total Weight	
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siliance with the above EU Directives has been verified aemical substance is absent from the list above, the cl oorated's knowledge and belief as of the date of this d is not below the threshold of regulatory concern for ar ing compounds used by Microchip meet the UL94 V0 f (ul.com/global/eng/pages/offerings/industries/chemica rotective "tubes" in which the specific product is ship n "reels" may be made from PVC plastic. chip Technology Incorporated believes the informatic original packing materials is true and correct to the be leteness and accuracy of data in this form because it nation is often protected from disclosure as trade sec ded only as estimates of the average weight of these poants, metals, and non-metal materials contained with chip Technology Incorporated does not provide any v nties provided by Microchip Technology Incorporate tions, sales order acknowledgement, and invoices.	via internal design controls, suppli hemical substance is NOT an intenti locument, there is no credible reaso ny regulatory scheme world-wide. lammability standard for plastics. Y als/plastics/ oped are made from polyvinyl chlori on in this form concerning substanc sto of its knowledge and belief, as of has been compiled based on the rar rets and some information may not parts and the average weight of anti- hin silicon devices (silicon IC) in the varranty, express or implied, with re I and its subsidiaries are contained changes to Material Content Declara- he users' reliance on the information	er declarations, and /or analytical test data. onal ingredient in the semiconductor device and, n to believe that the unavoidable impurity concen ou can access the UL iQTM family of databases to de (PVC) plastic. "Window envelopes" used to ho es restricted by RoHS in Microchip Technology In the date listed in this form. Microchip Technology iges provided in Material Safety Data Sheets prov have been provided by subcontract assemblers a cipated significant toxic metals components. These finished parts. spect to the information provided in this declarati in Microchip's standard terms and conditions of s attons and shall not be liable for any damages, dire	to the best o itration of the o obtain a tes ld the packin icorporated's y Incorporate ided by raw i nd raw mate se estimates ion. The excli- iale. These ar ect or indirec	of Microchip Tr e chemical sub it report at g slip on the o semiconduct ed cannot gua material suppliers. do not include usive, limited re provided in ct, consequent	echnology stance, if outer box and or devices in rantee the iers. Supplier Information is a trace levels product Microchip's tial or		Aluminum Titanium (mg) Total Tin Silver	7429-60-5 7440-32-6 Total Solder Ball 7440-31-5 7440-22-4	69.20 30.80 100.00 % of Total Weight 97.50 2.00	

	ice Type: 48 CSP (FC)		P	attern (Grap	hic)		•	ogeneous Materials: .g. pc boards, display	ys)	JEDEC 97 Prod Marking and/ Pkg. Labelin e1
Semiconductor Devi	CE Type: 48 CSP (FC)	"Contained In"	% I otal	1						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1.09	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica	Proprietary	Backside Coating	4,153	0.618	41.528		Silica	Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.231	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.231	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.014	956		Carbon Black	Proprietary	1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.183	12,300			Total	100.00	
Copper	7440-50-8	Under Bump Metal	0.212	0.032	2,120	0.18	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.012	774		Organosilicate polymer	Trade Secret	100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.006	421			Total		
Vanadium	7440-62-2	Under Bump Metal	0.028	0.000	284	0.05	(mg) Total	Under Bump Metal	% of Total Weight	
Silicon	7440-21-3	Chip (Die)	76.390	11.374	763.900	0.00	Copper	7440-50-8	58.90	0.00
Aluminum	7429-60-5	Redistribution Laver	0.152	0.023	1.522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.010	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	13.944	2.076	139,443		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.434	0.065	4.335		Vanadiam	Total		
Copper	7440-50-8	Solder Ball	0.072	0.011	723	11.37	(mg) Total	Chip (Die)	% of Total Weight	
ооррсі	1440 00 0	TOTALS		14.890	1.000.000	11.57	Doped Silicon	7440-21-3	100	70.55
	0.01489 g Tot		100.000	14.030	1,000,000		Doped Silicon	Total		
semiconductor device and its homogenous materials			S Pacast Dire	ctive) and wi	th Ell				1	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)			0 11000001 2110	ouro, and m		0.03	(mg) Total	Redistribution Layer	% of Total Weight	0.22
pliance with the above EU Directives has been verifie	d via internal design controls, suppli	ier declarations, and /or analytical test data.					Aluminum	7429-60-5	69.20	
chemical substance is absent from the list above, the o	chemical substance is NOT an intent									
is not below the threshold of regulatory concern for a	document, there is no credible reaso any regulatory scheme world-wide.	on to believe that the unavoidable impurity concer	ntration of the	chemical sul			Titanium	7440-32-6 Total	30.80	
is not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic	document, there is no credible reaso any regulatory scheme world-wide. flammability standard for plastics. Y cals/plastics/	on to believe that the unavoidable impurity concer You can access the UL iQTM family of databases t	ntration of the	chemical sul t report at	bstance, if			Total	100.00	
is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi	document, there is no credible reaso any regulatory scheme world-wide. flammability standard for plastics. Y cals/plastics/	on to believe that the unavoidable impurity concer You can access the UL iQTM family of databases t	ntration of the	chemical sul t report at	bstance, if	2.15	Titanium (mg) Total			
proprated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informati r original packing materials is true and correct to the b pleteness and accuracy of data in this form because it irmation is often protected from disclosure as trade see vided only as estimates of the average weight of these lopants, metals, and non-metal materials contained wit	document, there is no credible reaso any regulatory scheme world-wide. flammability standard for plastics. Y cals/plastics/ ipped are made from polyvinyl chlori ion in this form concerning substanc best of its knowledge and belief, as of t has been compiled based on the rar crets and some information may not parts and the average weight of anti-	on to believe that the unavoidable impurity concer ou can access the UL iQTM family of databases t ide (PVC) plastic. "Window envelopes" used to he ces restricted by ROHS in Microchip Technology In f the date listed in this form. Microchip Technolog nges provided in Material Safety Data Sheets prov- have been provided by subcontract assemblers a icipated significant toxic metals components. The	ntration of the o obtain a tes old the packin ncorporated's yy Incorporate vided by raw r and raw matei	chemical sul t report at g slip on the semiconduct d cannot gua naterial suppliers.	bstance, if outer box and tor devices in irantee the liers. Supplier Information is	2.15		Total	100.00	
is not below the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi in "reels" may be made from PVC plastic. cochip Technology Incorporated believes the informati original packing materials is true and correct to the b pleteness and accuracy of data in this form because is mation is often protected from disclosure as trade see ided only as estimates of the average weight of these	document, there is no credible reaso any regulatory scheme world-wide. flammability standard for plastics. Y cals/plastics/ ipped are made from polyvinyl chlori ion in this form concerning substanc vest of its knowledge and belief, as of t has been compiled based on the rar crets and some information may not parts and the average weight of anti- thin silicon devices (silicon IC) in the warranty, express or implied, with re	on to believe that the unavoidable impurity concer 'ou can access the UL iQTM family of databases t ide (PVC) plastic. "Window envelopes" used to he ces restricted by ROHS in Microchip Technology In f the date listed in this form. Microchip Technolog nges provided in Material Safety Data Sheets prov- have been provided by subcontract assemblers a icipated significant toxic metals components. The finished parts. espect to the information provided in this declarat	ntration of the o obtain a tes old the packin ncorporated's yy Incorporate vided by raw r and raw mate se estimates ion. The exclu	t report at g slip on the of semiconduct d cannot gua naterial suppi rial suppiers. do not includ usive, limited	bstance, if outer box and tor devices in irantee the liers. Supplier information is e trace levels product	2.15	(mg) Total	Total Solder Ball	100.00 % of Total Weight	
s not below the threshold of regulatory concern for a ing compounds used by Microchip meet the UL94 V0 /ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shi in "reels" may be made from PVC plastic. bechip Technology Incorporated believes the informatio original packing materials is true and correct to the b pleteness and accuracy of data in this form because it mation is often protected from disclosure as trade see ded only as estimates of the average weight of these pants, metals, and non-metal materials contained wit schip Technology Incorporated does not provide any unities provided by Microchip Technology Incorporate	document, there is no credible reaso any regulatory scheme world-wide. 'flammability standard for plastics. Y cals/plastics/ ipped are made from polyvinyl chlori est of its knowledge and belief, as of t has been compiled based on the rar crets and some information may not parts and the average weight of anti- thin silicon devices (silicon IC) in the warranty, express or implied, with re ed and its subsidiaries are contained r changes to Material Content Declara- the users' reliance on the information	on to believe that the unavoidable impurity concer 'ou can access the UL iQTM family of databases t ide (PVC) plastic. "Window envelopes" used to he the restricted by RoHS in Microchip Technology In f the date listed in this form. Microchip Technolog nges provided in Material Safety Data Sheets prov- have been provided by subcontract assemblers a icipated significant toxic metals components. The f finished parts. espect to the information provided in this declarat in Microchip's standard terms and conditions of s ations and shall not be liable for any damages, dii	ntration of the o obtain a tes old the packin ncorporated's yy Incorporate vided by raw r and raw mate se estimates ion. The exclusion. These ar rect or indirect	t report at g slip on the of semiconduct d cannot gua naterial suppi ial suppilies. do not includ usive, limited e provided in t, consequen	bstance, if outer box and tor devices in irantee the liers. Supplier Information is e trace levels product Microchip's tial or	2.15	(mg) Total	Total Solder Ball 7440-31-5	100.00 % of Total Weight 96.50	
s not below the threshold of regulatory concern for a ng compounds used by Microchip meet the UL94 V0 UL.com/global/eng/pages/offerings/industries/chemic rotective "tubes" in which the specific product is shi n "reels" may be made from PVC plastic. Chip Technology Incorporated believes the informati original packing materials is true and correct to the b leteness and accuracy of data in this form because in nation is often protected from disclosure as trade see ded only as estimates of the average weight of these pants, metals, and non-metal materials contained wit chip Technology Incorporated does not provide any nties provided by Microchip Technology Incorporate tions, sales order acknowledgement, and invoices.	document, there is no credible reaso any regulatory scheme world-wide. 'flammability standard for plastics. Y cals/plastics/ ipped are made from polyvinyl chlori est of its knowledge and belief, as of t has been compiled based on the rar crets and some information may not parts and the average weight of anti- thin silicon devices (silicon IC) in the warranty, express or implied, with re ed and its subsidiaries are contained r changes to Material Content Declara- the users' reliance on the information	on to believe that the unavoidable impurity concer 'ou can access the UL iQTM family of databases t ide (PVC) plastic. "Window envelopes" used to he the restricted by RoHS in Microchip Technology In f the date listed in this form. Microchip Technolog nges provided in Material Safety Data Sheets prov- have been provided by subcontract assemblers a icipated significant toxic metals components. The f finished parts. espect to the information provided in this declarat in Microchip's standard terms and conditions of s ations and shall not be liable for any damages, dii	ntration of the o obtain a tes old the packin ncorporated's yy Incorporate vided by raw r and raw mate se estimates ion. The exclusion. These ar rect or indirect	t report at g slip on the of semiconduct d cannot gua naterial suppi ial suppilies. do not includ usive, limited e provided in t, consequen	bstance, if outer box and tor devices in irantee the liers. Supplier Information is e trace levels product Microchip's tial or	2.15	(mg) Total Tin Silver	Total Solder Ball 7440-31-5 7440-22-4	100.00 % of Total Weight 96.50 3.00 0.50	14.45

	ce Type: 49 WLCSP (FL)		P	attern (Grapi				ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Produ Marking and/or Pkg. Labeling e1
Semiconductor Devic	ле туре: 45 тесобт (те)	"Contoined In"	W Lotal							
Basic Substance	CAS Number	"Contained In" Sub-Component	% I otal Weight	malnort		1.10	(mg) Total	Backside Coating	% of Total Weight	7.35
Silica		Backside Coating	4.153	mg/part	ppm		0.7		50.5	
Epoxy Resin	Proprietary	Backside Coating Backside Coating	4.153	0.623	41,528 15.509		Silica Epoxy Resin	Proprietary	56.5 21.1	
Acrylic Resin	Proprietary Proprietary	Backside Coating	1.551	0.233	15,509		Acrylic Resin	Proprietary Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.233	956		Carbon Black	Proprietary	1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.185	12,300		Calbori Black	Total	100.00	
Copper	7440-50-8	Under Bump Metal	0.212	0.032	2,120	0.18	(mg) Total	PBO Laver	% of Total Weight	1.23
Aluminum	7440-50-8	Under Bump Metal	0.212	0.032	774	0.10	Organosilicate polymer		100.00	1.23
Nickel	7423-50-5	Under Bump Metal	0.042	0.012	421		Organosilicate polymen	Tade Secret	100.00	
	7440-02-0	Under Bump Metal	0.042	0.006	284	0.05	() = ()			
Vanadium			0.010			0.05	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	11.466	763,900		Copper	7440-50-8	58.90	
Aluminum Titanium	7429-60-5 7440-32-6	Redistribution Layer Redistribution Layer	0.152	0.023	1,522 678		Aluminum Nickel	7429-90-5 7440-02-0	21.50 11.70	
Tin	7440-32-6	Solder Ball	13.800	2.071	137.998		Vanadium	7440-02-0	7.90	
Silver	7440-22-4	Solder Ball	0.578	0.087	5,780		Variadium	Total	100.00	
Copper	7440-22-4 7440-50-8	Solder Ball	0.072	0.087	723	11.47	(mg) Total		% of Total Weight	76.39
Copper	7440-50-8			15.010	1.000.000	11.47		Chip (Die) 7440-21-3		76.39
			ALS: 100.000	15.010	1,000,000		Doped Silicon	7440-21-3	100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		EC (RoHS Directive), EU Directive 2011/65/EU	RoHS Recast Dire	ective) and wit	h EU	0.03	(mg) Total	Total Redistribution Layer	100.00 % of Total Weight	0.22
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c prorated's knowledge and belief as of the date of this c	comply with EU Directive 2002/95/ I via internal design controls, supp hemical substance is NOT an inter locument, there is no credible reas	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. tional ingredient in the semiconductor device	and, to the best o	of Microchip Te	echnology	0.03	(mg) Total Aluminum Titanium			0.22
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c roprated's knowledge and belief as of the date of this c i, is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f	comply with EU Directive 2002/95// I via internal design controls, supp hemical substance is NOT an inter locument, there is no credible reas ny regulatory scheme world-wide. flammability standard for plastics.	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. titional ingredient in the semiconductor device son to believe that the unavoidable impurity co	and, to the best o	of Microchip Te e chemical sub	echnology	0.03	Aluminum	Redistribution Layer 7429-60-5	% of Total Weight 69.20	0.22
s semiconductor device and its homogenous materials sctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), npliance with the above EU Directives has been verified chemical substance is absent from the list above, the c prorated's knowledge and belief as of the date of this c , is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic.	comply with EU Directive 2002/95/ I via internal design controls, supp hemical substance is NOT an inter document, there is no credible reas ny regulatory scheme world-wide. flammability standard for plastics. als/plastics/	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. Itional ingredient in the semiconductor device on to believe that the unavoidable impurity co You can access the UL iQTM family of databa	and, to the best o oncentration of the ses to obtain a tes	of Microchip Te e chemical sub st report at	echnology ostance, if	2.17	Aluminum	Redistribution Layer 7429-60-5 7440-32-6	% of Total Weight 69.20 30.80	0.22
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ci- orporated's knowledge and belief as of the date of this ci- , is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f ;/ul.com/global/eng/pages/offerings/industries/chemic: protective "tubes" in which the specific product is ship	comply with EU Directive 2002/95/ I via internal design controls, supp hemical substance is NOT an inter locument, there is no credible reas ny regulatory scheme world-wide. flammability standard for plastics. als/plastics/ opped are made from polyvinyl chlo on in this form concerning substar est of its knowledge and belief, as has been compiled based on the r rets and some information may nc parts and the average weight of an	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. titional ingredient in the semiconductor device on to believe that the unavoidable impurity of You can access the UL iQTM family of databa ride (PVC) plastic. "Window envelopes" used ces restricted by RoHS in Microchip Technolo of the date listed in this form. Microchip Technolo the tate been provided by subcontract assemb ticipated significant toxic metals components	and, to the best o oncentration of the ses to obtain a tes to hold the packin ogy Incorporated's ology Incorporated provided by raw 1 provided by raw 1	of Microchip Tr e chemical sub it report at g slip on the o semiconduct ed cannot gua material suppl rial suppliers.	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is		Aluminum	Redistribution Layer 7429-60-5 7440-32-6 Total	% of Total Weight 69.20 30.80 100.00	
sctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ci orporated's knowledge and belief as of the date of this ci , is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f i//ul.com/global/eng/pages/offerings/industries/chemic: protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatic rordinal packing materials is true and correct to the be spleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these	comply with EU Directive 2002/95/ I via internal design controls, supp hemical substance is NOT an inter locument, there is no credible reas ny regulatory scheme world-wide. flammability standard for plastics. als/plastics/ oped are made from polyvinyl chlo op in this form concerning substar sto of its knowledge and belief, as i has been compiled based on the r rets and some information may no parts and the average weight of an in silicon devices (silicon IC) in th warranty, express or implied, with i	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. titional ingredient in the semiconductor device on to believe that the unavoidable impurity of You can access the UL iQTM family of databa ride (PVC) plastic. "Window envelopes" used ces restricted by RoHS in Microchip Technolo of the date listed in this form. Microchip Technolo of the date listed in this form. Microchip Technolo the abeen provided by subcontract assemb thave been provided by subcontract assemb to have been provided by subcontract assemb e finished parts.	and, to the best o incentration of the ses to obtain a tes to hold the packin ogy Incorporated's provided by raw n ters and raw mate . These estimates	of Microchip Tr e chemical sub at report at ng slip on the of e semiconduct ed cannot gua material suppliers. do not includo usive, limited	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product		Aluminum Titanium (mg) Total	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball	% of Total Weight 69.20 30.80 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the ci proprated's knowledge and belief as of the date of this of is not below the threshold of regulatory concern for ar ding compounds used by Microchip meet the UL94 V0 f ://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship ain "reels" may be made from PVC plastic. roochip Technology Incorporated believes the informatic r original packing materials is true and correct to the be pleteness and accuracy of data in this form because it rmation is often protected from disclosure as trade sec vided only as estimates of the average weight of these opants, metals, and non-metal materials contained with roochip Technology Incorporated does not provide any v ranties provided by Microchip Technology Incorporated transformed the second of t	comply with EU Directive 2002/95// I via internal design controls, supp hemical substance is NOT an inter document, there is no credible reas ny regulatory scheme world-wide. Ilammability standard for plastics. als/plastics/ opped are made from polyvinyl chlo on in this form concerning substar est of its knowledge and belief, as has been compiled based on the r rets and some information may no parts and the average weight of an in silicon devices (silicon IC) in th warranty, express or implied, with d and its subsidiaries are containeer changes to Material Content Decla he users' reliance on the informati	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. titional ingredient in the semiconductor device on to believe that the unavoidable impurity of You can access the UL iQTM family of databa ride (PVC) plastic. "Window envelopes" used ces restricted by RoHS in Microchip Technolo of the date listed in this form. Microchip Technolo of the date listed in this form. Microchip Technolo in the seen provided by subcontract assemb ticipated significant toxic metals components e finished parts. "espect to the information provided in this ded in Microchip's standard terms and condition rations and shall not be liable for any damage	and, to the best o oncentration of the ses to obtain a tes to hold the packin ology Incorporated's ology Incorporate provided by raw i lers and raw mate These estimates claration. The excli s of sale. These ar s, direct or indirect	of Microchip Te e chemical sub at report at ag slip on the of semiconduct ed cannot gua material suppliers. do not include usive, limited re provided in ct, consequent	echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels product Microchip's tial or		Aluminum Titanium (mg) Total Tin	Redistribution Layer 7429-60-5 7440-32-6 Total Solder Ball 7440-31-5	% of Total Weight 69.20 30.80 100.00 % of Total Weight 95.50	

CSP

Semiconductor Device Type: 64 CSP (DY)				Pattern (Graphic)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Semiconductor Devi	ice Type: 64 CSP (DY)		-							
		"Contained In"	% I otal			1.90	(mg) Total	Backside Coating	% of Total Weight	7.35
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1.50	(ing) rotai	Dackside Coulling	% of rotal Weight	1.00
Silica	Proprietary	Backside Coating	4.153	1.074	41,528		Silica		56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.401	15,509		Epoxy Resin	Proprietary	21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.401	15,509		Acrylic Resin	Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.025	956		Carbon Black		1.3	
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.318	12,300			Total		
Copper	7440-50-8	Under Bump Metal	0.212	0.055	2,120	0.32	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.020	774		Organosilicate polymer		100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.011	421			Total	100.00	7
Vanadium	7440-62-2	Under Bump Metal	0.028	0.007	284	0.09	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	19.762	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.039	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.018	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	14.233	3.682	142,333		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.145	0.037	1,445			Total	100.00	7
Copper	7440-50-8	Solder Ball	0.072	0.019	723	19.76	(mg) Total	Chip (Die)	% of Total Weight	76.39
		TOTALS:	100.000	25.870	1,000,000		Doped Silicon	7440-21-3	100	
	0.0259 g To	tal Maee						Total	100.00	
			5 Necasi Dire	ective) and wi	th EU	0.06	(mg) Total	Redistribution Layer	% of Total Weight	0.22
pliance with the above EU Directives has been verifie hemical substance is absent from the list above, the	ed via internal design controls, suppl chemical substance is NOT an inten	tional ingredient in the semiconductor device and,	to the best o	f Microchip T	echnology	0.06	Aluminum	7429-60-5	69.20	0.22
pliance with the above EU Directives has been verifie themical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a	, d via internal design controls, suppl chemical substance is NOT an inten document, there is no credible reas any regulatory scheme world-wide.	tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer	to the best o stration of the	f Microchip T chemical su	echnology	0.06	,	7429-60-5 7440-32-6	69.20 30.80	
pliance with the above EU Directives has been verifie chemical substance is absent from the list above, the rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a ding compounds used by Microchip meet the UL94 V0 ://ul.com/global/eng/pages/offerings/industries/chemi	d via internal design controls, supp chemical substance is NOT an inten document, there is no credible reas any regulatory scheme world-wide. I flammability standard for plastics. ` cals/plastics/	tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer You can access the UL iQTM family of databases to	to the best o tration of the o obtain a tes	f Microchip T chemical sul t report at	echnology bstance, if	0.06	Aluminum	7429-60-5	69.20 30.80	
mpliance with the above EU Directives has been verifie chemical substance is absent from the list above, the orporated's knowledge and belief as of the date of this r, is not below the threshold of regulatory concern for a lding compounds used by Microchip meet the UL94 VO //ul.com/global/eng/pages/offerings/industries/chemit p protective "tubes" in which the specific product is sh	d via internal design controls, supp chemical substance is NOT an inten document, there is no credible reas any regulatory scheme world-wide. I flammability standard for plastics. ` cals/plastics/	tional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer You can access the UL iQTM family of databases to	to the best o tration of the o obtain a tes	f Microchip T chemical sul t report at	echnology bstance, if	0.06	Aluminum	7429-60-5 7440-32-6	69.20 30.80	
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MICROCHIP Semiconductor Device Type: 80 WLCSP (FS)				Pattern (Graphic)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Semiconductor Device Typ	be: 80 WLCSP (I									
		"Contained In"	% I otal			1.93	(mg) Total	Backside Coating	% of Total Weight	7.35
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1.55	(ing) rotai	Backside obating	% of rotal Weight	1.55
Silica	Proprietary	Backside Coating	4.153	1.090	41,528		Silica	a Proprietary	56.5	
Epoxy Resin	Proprietary	Backside Coating	1.551	0.407	15,509		Epoxy Resin		21.1	
Acrylic Resin	Proprietary	Backside Coating	1.551	0.407	15,509		Acrylic Resin	n Proprietary	21.1	
Carbon Black	Proprietary	Backside Coating	0.096	0.025	956		Carbon Black		1.3	ļ
Organosilicate polymer	Trade Secret	PBO Layer	1.230	0.323	12,300			Total		
Copper	7440-50-8	Under Bump Metal	0.212	0.056	2,120	0.32	(mg) Total	PBO Layer	% of Total Weight	1.23
Aluminum	7429-90-5	Under Bump Metal	0.077	0.020	774		Organosilicate polymer		100.00	
Nickel	7440-02-0	Under Bump Metal	0.042	0.011	421			Total		
Vanadium	7440-62-2	Under Bump Metal	0.028	0.007	284	0.09	(mg) Total	Under Bump Metal	% of Total Weight	0.36
Silicon	7440-21-3	Chip (Die)	76.390	20.052	763,900		Copper	7440-50-8	58.90	
Aluminum	7429-60-5	Redistribution Layer	0.152	0.040	1,522		Aluminum	7429-90-5	21.50	
Titanium	7440-32-6	Redistribution Layer	0.068	0.018	678		Nickel	7440-02-0	11.70	
Tin	7440-31-5	Solder Ball	13.800	3.622	137,998		Vanadium	7440-62-2	7.90	
Silver	7440-22-4	Solder Ball	0.578	0.152	5,780			Total		
Copper	7440-50-8	Solder Ball	0.072	0.019	723	20.05	(mg) Total	Chip (Die)	% of Total Weight	76.39
		TOTALS:	100.000	26.250	1,000,000		Doped Silicon	7440-21-3	100	
	0.02625 (a Total Mass						Total	100.00	ī
s semiconductor device and its homogenous materials comply ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 200	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ective) and wi	th EU	0.06	(mg) Total	Redistribution Layer	% of Total Weight	
						0.00	(Redistribution Layer	% of Total weight	0.22
ompliance with the above EU Directives has been verified via int	ernal design controls,	supplier declarations, and /or analytical test data.				0.00	Aluminum	7429-60-5	69.20	0.22
chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this docume r, is not below the threshold of regulatory concern for any regul Iding compounds used by Microchip meet the UL94 V0 flammal	I substance is NOT an ent, there is no credible latory scheme world-v bility standard for plas	intentional ingredient in the semiconductor device and, e reason to believe that the unavoidable impurity concen vide.	tration of the	e chemical sul			-		69.20 30.80	
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chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this docume t, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammal c//ul.com/global/eng/pages/offerings/Industries/chemicals/plas e protective "tubes" in which the specific product is shipped are tain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in thi ir original packing materials is true and correct to the best of its npleteness and accuracy of data in this form because it has bee romation is often protected from disclosure as trade secrets any idea only as estimates of the average weight of these parts and lopants, metals, and non-metal materials contained within silic rochip Technology Incorporated does not provide any warranty ranties provided by Microchip Technology Incorporated and its tatations, sales order acknowledgement, and invoices. rochip disclaims any duty to notify users of updates or change erwise, suffered by users or third parties as a result of the user and suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by users or third parties as a result of the user and the suffered by user and t	I substance is NOT an ont, there is no credible latory scheme world-w bility standard for plas- tics/ e made from polyviny is form concerning su s knowledge and belie en compiled based on d some information m d the average weight on devices (silicon IC) y, express or implied, s subsidiaries are con es to Material Content	intentional ingredient in the semiconductor device and, reason to believe that the unavoidable impurity concern vide. stics. You can access the UL IQTM family of databases to a chloride (PVC) plastic. "Window envelopes" used to ho bstances restricted by RoHS in Microchip Technology In f, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets prov ay not have been provided by subcontract assemblers a of anticipated significant toxic metals components. The in the finished parts. with respect to the information provided in this declarat tained in Microchip's standard terms and conditions of s Declarations and shall not be liable for any damages, dir	attration of the o obtain a tess old the packin accorporated's y Incorporate ided by raw i ind raw mate se estimates ion. The exclu- sale. These ar ect or indirect	e chemical sul t report at g slip on the semiconduct ed cannot gua naterial suppi rial suppliers. do not includ usive, limited e provided in ct, consequen	bstance, if outer box and tor devices in rrantee the liers. Supplier Information is e trace levels product Microchip's tial or		Aluminum Titanium (mg) Total Tin Silver	7429-60-5 7440-32-6 Total Solder Ball 7440-31-5 7440-22-4	69.20 30.80 100.00 % of Total Weight 95.50 4.00 0.50	: 14.45