

#### 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 still approved for RoHS required designs without exemption.
- All Ceramic packaged products still 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).

#### 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).

#### 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.

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. Rather, prior to July 2009, diantimony trioxide was the primary inorganic flame retardant material in most mold compounds; one unique mold compound used a trade secret "metal hydroxide" instead of diantimony trioxide. Certain mold compounds **do not** contain an inorganic flame retardant.

#### 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 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. 4.0. 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 provides superior electrical performance over (Au) Gold Wire. Using PdCu wire provides a hedge on rising prices that can affect the supply of gold available for manufacturing. Therefore, PdCu wire helps ensure a steady supply of components that can support your ongoing business needs. It is Microchip's intent to convert all applicable products within the next 18 to 24 month. This switching of wire bond materials does not change the environmental compliance or reporting category of any product. To facilitate the ease of material content reporting to both our suppliers and customers during this transition, all transitioned Palladium Copper Wire packages the content is group together.

### 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.



## 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	Type: EP 02a	DDDAK (e.)		nation Base Apper Alloy (C	. ,		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: EB U3 (Lead) L	"Contained In"	% Total							es
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	544.12	(mg) Total	Mold Compound	% ot Total Weight	39.21
Fused 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	100.00	
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		Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.086	1.198	864		Tin	7440-31-5	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.020	0.282	204		Silver	7440-22-4	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.003	0.046	33			Total	100.00	
Silicon	7440-21-3	Chip (Die)	0.270	3.747	2,700	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 F	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 c	Total Mass						Total	100.00	='
	omply with EU Directive 20		S Recast Direc	ctive) and with	EU	3.75	Total (mg)	Chip (Die)	% of Total Weight	0.27
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified v	ria internal design controls	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs, supplier declarations, and /or analytical test data.		·		3.75	Total (mg) Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified vehicles with the above 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	ria internal design controls emical substance is NOT ar cument, there is no credib regulatory scheme world-	2002/95/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	Microchip Tec	chnology	3.75	( 3/	7440-21-3	100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  npliance with the above EU Directives has been verified v  chemical substance is absent from the list above, the che  rporated'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	ia internal design controls emical substance is NOT ar cument, there is no credib regulatory scheme world- immability standard for pla	2002/95/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	Microchip Tec	chnology	0.97	( 3/	7440-21-3	100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). impliance with the above EU Directives has been verified vechemical 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 flab. 1/Jul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp	ia internal design controls emical substance is NOT ar cument, there is no credib regulatory scheme world- ummability standard for pla s/plastics/	20/295/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and let reason to believe that the unavoidable impurity conceivide.  astics. You can access the UL iQTM family of databases to	, to the best of ntration of the o obtain a test	Microchip Tec chemical subs report at	chnology stance, if		Silicon	7440-21-3 Total	100	
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EB 3L DDPAK 10:00 AM : 5/6/2014

Semiconductor Device 1	Type: FT 05/(cod)	DDPAK (m		nation Base A pper Alloy (C				ogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device i	Type. L1 03 (Lead)	"Contained In"	% Iotal			500.00	( )=		~ .=	26.56
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 (Aa)	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	7440-21-3	Wire Bond	0.020	0.794	400	1.79		7440-22-4		0.09
Gold					5,700		Silver (Ag)		79	
IIN	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.570	11.308			Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	1,983.900	1,000,000	Proprietar	y Curing agent & Hardener	Trade Secret	3	
	1.9839	g Total Mass						Total	100.00	
		002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH								
, , , ,	a internal design control	s, supplier declarations, and /or analytical test data.		cuve) and with	EU	12.30	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	0.62
liance with the above EU Directives has been verified via emical substance is absent from the list above, the cher orated's knowledge and belief as of the date of this doc a not below the threshold of regulatory concern for any in ing compounds used by Microchip meet the UL94 VO flan	mical substance is NOT a sument, there is no credil regulatory scheme world nmability standard for pl	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce	, to the best of ntration of the	Microchip Teo	chnology		Doped Silicon	7440-21-3 Total	100	
pliance with the above EU Directives has been verified vistemical substance is absent from the list above, the cher sorated's knowledge and belief as of the date of this doct is not below the threshold of regulatory concern for any ing 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	mical substance is NOT a nument, there is no credii regulatory scheme world mmability standard for pl plastics/	on intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity concer- wide.	, to the best of ntration of the o obtain a test	Microchip Tec chemical subs	chnology stance, if	0.79	, ,,	7440-21-3	100	
poliance with the above EU Directives has been verified vice 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 right of the light	mical substance is NOT a cument, there is no credit regulatory scheme world immability standard for pl /plastics/ ed are made from polyvir in this form concerning s of its knowledge and bel is been compiled based of is and some information ts and the average weigt	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 be 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 promay not have been provided by subcontract assemblers at of anticipated significant toxic metals components. The	to the best of ntration of the o obtain a test old the packing ncorporated's a gy Incorporate vided by raw m and raw materi	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara taterial supplie	chnology stance, if uter box and r devices in untee the ers. Supplier formation is		Doped Silicon	7440-21-3 Total	100 100.00 % of Total Weight	0.04
pliance with the above EU Directives has been verified victorial 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 thing compounds used by Microchip meet the UL-94 Volfing compounds used by Microchip meet the UL-94 Volfing protective "tubes" in which the specific product is shipped in "reels" may be made from PVC plastic.  The protective "tubes in the specific product is shipped in "reels" may be made from PVC plastic.  The protective in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product is shipped in the specific product in the specific product in the specific product is shipped in the specific product in the spe	mical substance is NOT a rument, there is no credit regulatory scheme world regulatory scheme world regulatory scheme world regulatory scheme world plastics/ ed are made from polyvir in this form concerning so of its knowledge and bell s been compiled based co s and some information to and the average weigl silicon devices (silicon I	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 be 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 promay not have been provided by subcontract assemblers at of anticipated significant toxic metals components. The	to the best of the obtain a test of the packing accorporated's ylincorporated yided by raw mand raw materise estimates dicion. The exclusion of the control	Microchip Tec chemical subs report at g slip on the ou semiconducto d cannot guara laterial suppliers. It lo not include sive, limited p	chnology stance, if uter box and or devices in sintee the ers. Supplier of ormation is trace levels		Doped Silicon  (mg) Total  JGPSSI (D02)	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.04
pliance with the above EU Directives has been verified vichemical 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 ring compounds used by Microchip meet the UL94 V0 flan (vul.com/global/eng/pages/offerings/industries/chemicals/orotective "tubes" in which the specific product is shippe in "reels" may be made from PVC plastic.  Dechip Technology Incorporated believes the information is original packing materials is true and correct to the best obleteness and accuracy of data in this form because it has mation is often protected from disclosure as trade secret ded only as estimates of the average weight of these par pants, metals, and non-metal materials contained within occlip Technology Incorporated does not provide any war anties provided by Microchip Technology Incorporated are ations, sales order acknowledgement, and invoices.	mical substance is NOT a rument, there is no credit regulatory scheme world regulatory scheme world rumability standard for pl /plastics/ ed are made from polyvir in this form concerning s of its knowledge and bels s been compiled based of s and some information ts and the average weigl silicon devices (silicon I rranty, express or implied and its subsidiaries are co-	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concert-wide.  astics. You can access the UL iQTM family of databases to a string of the seminary of the 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 promay not have been provided by subcontract assemblers and 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 accorporated's gy Incorporated by raw materiase estimates dicion. The exclusale. These are rect or indirect	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara aterial supplie lo not include sive, limited p p provided in N	chnology stance, if uter box and r devices in untee the res. Supplier information is trace levels roduct licrochip's	0.79	Doped Silicon  (mg) Total  JGPSSI (D02)	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
rporated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any lating compounds used by Microchip meet the UL94 V0 flan (Jul.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 pleteness and accuracy of data in this form because it haimation 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 ochip Technology Incorporated does not provide any war anties provided by Microchip Technology Incorporated arations, sales order acknowledgement, and invoices.	mical substance is NOT a rument, there is no credit regulatory scheme world regulatory scheme world rumability standard for pl /plastics/ ed are made from polyvir in this form concerning s of its knowledge and bels s been compiled based of s and some information ts and the average weigl silicon devices (silicon I rranty, express or implied and its subsidiaries are co-	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 be substances restricted by RoHS in Microchip Technology Is lief, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets promay not have been provided by subcontract assemblers at of anticipated significant toxic metals components. The C) in the finished parts.  d, with respect to the information provided in this declarationtained in Microchip's standard terms and conditions of at Declarations and shall not be liable for any damages, distributions.	to the best of ntration of the o obtain a test old the packing accorporated's gy Incorporated by raw materiase estimates dicion. The exclusale. These are rect or indirect	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara aterial supplie lo not include sive, limited p p provided in N	chnology stance, if uter box and r devices in untee the res. Supplier information is trace levels roduct licrochip's	0.79	Doped Silicon  (mg) Total  JGPSSI (D02)	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 % of Total Weight	0.04

ET 5L DDPAK 10:00 AM : 5/6/2014

MICROCHIP  Semiconductor Device	Type: MC 08 (Lead) DFN	1 2x3 mm (B3 / BY)		nation Base A pper Alloy (C	•		•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	1	"Contained In"	% lotal			7.49	(mg) Total	Mold Compound	% ot Total Weight	48
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		( 3,			
Silica, fused	60676-86-0	Mold Compound	43.200	6.739	432,000		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.328	0.363	23,280	Epoxy	Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.328	0.363	23,280		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.144	0.022	1,440		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44.421	6.930	444,212			Total	100.00	
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	100.00	l .
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	0.04	Silver	7440-22-4	78 78	0.24
Gold	7440-57-5	Wire Bond	0.400	0.256	4.000			Trade Secret	18	
				0.643			Acrylate resins Proprietary			
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.120		41,200		Treated silica	Trade Secret	2	
		TOTALS:	100.000	15.600	1,000,000	Heter	rocyclic organic compound	Trade Secret Total	2	
	omply with EU Directive 2002/95	/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	IS Recast Direc	tive) and with	EU	0.26	Total (mg)	Chip (Die)	% of Total Weight	1.64
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified verbenical substance is absent from the list above, the ch	ria internal design controls, sup emical substance is NOT an inte	plier declarations, and /or analytical test data.	, to the best of	Microchip Tec	hnology	0.26	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	1.64
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified with the mission of the distance is absent from the list above, the chiprorated'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 fix //ul.com/global/eng/pages/offerings/industries/chemical	ria internal design controls, sup emical substance is NOT an inte cument, there is no credible rea regulatory scheme world-wide. immability standard for plastics s/plastics/	plier 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 of ntration of the o obtain a test	Microchip Tec chemical subs	chnology stance, if	0.26	, ,,	7440-21-3	100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified we chemical substance is absent from the list above, the che proporated'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 flat ://ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp	ria internal design controls, sup emical substance is NOT an inte cument, there is no credible rea regulatory scheme world-wide. immability standard for plastics s/plastics/	plier 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 of ntration of the o 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	
s semiconductor device and its homogenous materials cictive 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 chorporated'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 by://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.  Trochip Technology Incorporated believes the information ir original packing materials is true and correct to the bes apleteness and accuracy of data in this form because it homation is often protected from disclosure as trade secrevided only as estimates of the average weight of these pelopants, metals, and non-metal materials contained withit	ria internal design controls, sup smical substance is NOT an inte cument, there is no credible rea regulatory scheme world-wide. immability standard for plastics s/plastics/ sed are made from polyvinyl chl in this form concerning substa t of its knowledge and belief, as as been compiled based on the tets and some information may in trts and the average weight of a	plier 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 oride (PVC) plastic. "Window envelopes" used to have seen that the date listed in this form. Microchip Technology Ir of the date listed in this form. Microchip Technologranges provided in Material Safety Data Sheets provide when the provided by subcontract assemblers a nticipated significant toxic metals components. The	o obtain a test old the packing ncorporated's s y Incorporate yided by raw m and raw materi	Microchip Tec chemical subs report at slip on the ou semiconducto d cannot guara aterial supplie	chnology stance, if ster box and r devices in intee the ers. Supplier iformation is		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
inctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified with the above EU Directives has been verified with the above EU Directives has been verified with the above the chief as of the date of this do it is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 flat/fluc.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shippain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information or original packing materials is true and correct to the besupleteness and accuracy of data in this form because it in mation is often protected from disclosure as trade secretided only as estimates of the average weight of these particles.	ria internal design controls, sup  perical substance is NOT an inte  cument, there is no credible re- regulatory scheme world-wide.  Immability standard for plastics  s/plastics/  red are made from polyvinyl chl  in this form concerning substatat of its knowledge and belief, as  as been compiled based on the  tests and some information may in  rists and the average weight of a  n silicon devices (silicon IC) in the  retarranty, express or implied, with	plier 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 oride (PVC) plastic. "Window envelopes" used to home the concern of the date listed in this form. Microchip Technology In of the date listed in this form. Microchip Technolog ranges provided in Material Safety Data Sheets provided have been provided by subcontract assemblers anticipated significant toxic metals components. The he finished parts.  Tespect to the information provided in this declarate.	to the best of ontration of the coordinatest old the packing incorporated's say Incorporated by raw mand raw materise estimates dition. The exclusion	Microchip Tecchemical substreport at slip on the outserniconductor a cannot guaraterial suppliers. Ir o not include sive, limited prisoners.	chnology tance, if ater box and r devices in intee the ers. Supplier iformation is trace levels		Doped Silicon  (mg) Total  Gold  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.4
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  appliance with the above EU Directives has been verified to  the chemical substance is absent from the list above, the che  riporated'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 fiz  "//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.   oochip 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 hr  mation is often protected from disclosure as trade secre  yided only as estimates of the average weight of these  payopants, metals, and non-metal materials contained within  oochip Technology Incorporated does not provide any way  anties provided by Microchip Technology Incorporated  and the provided of the provide and way way  anties provided by Microchip Technology Incorporated  and the provided of the provide any way  anties provided by Microchip Technology Incorporated  and the provided of the provide and the provide and the provide and the provided of the provide and the provided of the provided on the provided of the provided on the provided on the provided of the provided on the	ria internal design controls, sup smical substance is NOT an inte cument, there is no credible rea regulatory scheme world-wide. Immability standard for plastics s/plastics/ sed are made from polyvinyl chl in this form concerning substat to fits knowledge and belief, as as been compiled based on the tets and some information may no trits and the average weight of a n silicon devices (silicon IC) in the transty, express or implied, with and its subsidiaries are contained the subsers' reliance on the information and the subsers' reliance on the information.	plier 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 oride (PVC) plastic. "Window envelopes" used to be concest restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets provided by subcontract assemblers anticipated significant toxic metals components. The hef finished parts.  Irrespect to the information provided in this declarated in Microchip's standard terms and conditions of starations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations.	to the best of ontration of the coordinates obtain a test old the packing accorporated's and raw materiese estimates distinct. The exclusion. The exclusion. The exclusion are are are contracted or indirect or indirect 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 M	chnology stance, if atter box and or devices in intee the ors. Supplier information is trace levels coduct licrochip's	0.06	Doped Silicon  (mg) Total  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	0.4
citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified whemical substance is absent from the list above, the chies not below the threshold of regulatory concern for any ing compounds used by Microchip meet the UL94 V0 flat/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp in "reels" may be made from PVC plastic.  Ochip Technology Incorporated believes the information original packing materials is true and correct to the besoleteness and accuracy of data in this form because it in mation is often protected from disclosure as trade secretided only as estimates of the average weight of these papants, metals, and non-metal materials contained within ochip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated at in this form security is a secretic form of the average weight of these papants, metals, and non-metal materials contained within ochip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated at incorporated is a secretic form of the average weight of these papants, metals, and non-metal materials contained within ochip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated is at the provided by Micro	ria internal design controls, sup smical substance is NOT an inte cument, there is no credible rea regulatory scheme world-wide. Immability standard for plastics s/plastics/ sed are made from polyvinyl chl in this form concerning substat to fits knowledge and belief, as as been compiled based on the tets and some information may no trits and the average weight of a n silicon devices (silicon IC) in the transty, express or implied, with and its subsidiaries are contained the subsers' reliance on the information and the subsers' reliance on the information.	plier 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 oride (PVC) plastic. "Window envelopes" used to be concest restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets provided by subcontract assemblers anticipated significant toxic metals components. The hef finished parts.  Irrespect to the information provided in this declarated in Microchip's standard terms and conditions of starations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations.	to the best of ontration of the coordinates obtain a test old the packing accorporated's and raw materiese estimates distinct. The exclusion. The exclusion. The exclusion are are are contracted or indirect or indirect 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 M	chnology stance, if atter box and or devices in intee the ors. Supplier information is trace levels coduct licrochip's	0.06	Doped Silicon  (mg) Total  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	0.4

MC 8 DFN 10:00 AM : 5/6/2014

MICROCHIP				nation Base A				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: MF 08 (Lead) DFN									e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2,485	0.591	24.851	Fnox	/ Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.485	0.591	24,851	ĺ	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.154	0.037	1,537		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	38.576	9.181	385,763	•		Total	100.00	
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	<u>]</u>
Treated silica	Trade Secret	Die Attach	0.019	0.004	188			Total	100.00	
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	7440-22-4	78	
Gold	7440-57-5	Wire Bond	1.470	0.350	14,700		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.140	0.747	31,400		Treated silica	Trade Secret	2	
		TOTALS:	100.000	23.800	1,000,000	Heter	rocyclic organic compound		2	<u>l</u>
	0.0238 g To	tal Mass						Total	100.00	
his semiconductor device and its homogenous materials c	omply with EU Directive 2002/95	/EC (RoHS Directive), EU Directive 2011/65/EU (RoF	IS Recast Direc	ctive) and with	EU					
						0.86	Total (mg)	Chip (Die)	% of Total Weight	3.61
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		elles de desertes e condita escada de la constanta de la const		,		0.86	, 5,			3.61
ompliance with the above EU Directives has been verified		•	. to the best of	·		0.86	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
ompliance with the above EU Directives has been verified value a chemical substance is absent from the list above, the characteristic structure of the date of this day, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 flat.	emical substance is NOT an inte ocument, there is no credible rea y regulatory scheme world-wide. ammability standard for plastics	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce	ntration of the	Microchip Tec	hnology	0.86	, 5,	7440-21-3	100	
, , , ,	emical substance is NOT an inte ocument, there is no credible rea y regulatory scheme world-wide. ammability standard for plastics ls/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 to	ntration of the	Microchip Tec chemical subs	chnology tance, if		Doped Silicon	7440-21-3 Total	100	
ompliance with the above EU Directives has been verified to a chemical substance is absent from the list above, the checorporated's knowledge and belief as of the date of this dony, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 flatp://ul.com/global/eng/pages/offerings/industries/chemical the protective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.	emical substance is NOT an inte ocument, there is no credible rea y regulatory scheme world-wide. and and standard for plastics is/plastics/ ped are made from polyvinyl chle	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce.  You can access the UL IQTM family of databases to bride (PVC) plastic. "Window envelopes" used to he	ntration of the	Microchip Tec chemical subs report at g slip on the ou	chnology tance, if ter box and		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
ompliance with the above EU Directives has been verified of a chemical substance is absent from the list above, the checorporated's knowledge and belief as of the date of this deay, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 flatp://ul.com/global/eng/pages/offerings/industries/chemical the protective "tubes" in which the specific product is shipped.	emical substance is NOT an inte ocument, there is no credible rea y regulatory scheme world-wide. ammability standard for plastics Is/plastics/ ped are made from polyvinyl chle in in this form concerning substa st of its knowledge and belief, as has been compiled based on the ets and some information may n arts and the average weight of al	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce . You can access the UL iQTM family of databases to bride (PVC) plastic. "Window envelopes" used to have sestricted by RoHS in Microchip Technology I of the date listed in this form. Microchip Technologranges provided in Material Safety Data Sheets pro ot have been provided by subcontract assemblers sticipated significant toxic metals components. The	ntration of the to obtain a test old the packing ncorporated's cylororporate dylor old of the packing ncorporate and the packing ncorporate and the packing ncorporate and the packing ncorporate ncor	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara aterial supplie	thnology tance, if atter box and r devices in intee the rrs. Supplier aformation is		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
ompliance with the above EU Directives has been verified of a chemical substance is absent from the list above, the che corporated's knowledge and belief as of the date of this de ny, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 fletp://ul.com/global/eng/pages/offerings/industries/chemical the protective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.  icrochip Technology Incorporated believes the information eir original packing materials is true and correct to the besompleteness and accuracy of data in this form because it hormation is often protected from disclosure as trade secrevoided only as estimates of the average weight of these particulars.	emical substance is NOT an inte ocument, there is no credible rea y regulatory scheme world-wide. ammability standard for plastics Is/plastics/ ped are made from polyvinyl chle in in this form concerning substa st of its knowledge and belief, as has been compiled based on the ets and some information may n arts and the average weight of an in silicon devices (silicon IC) in the arranty, express or implied, with	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce.  You can access the UL iQTM family of databases to bride (PVC) plastic. "Window envelopes" used to be unces restricted by RoHS in Microchip Technology I of the date listed in this form. Microchip Technology aranges provided in Material Safety Data Sheets proof thave been provided by subcontract assemblers nticipated significant toxic metals components. The lefinished parts.  respect to the information provided in this declaration.	ntration of the cooking a test old the packing a corporated's gy Incorporate vided by raw m and raw materiese estimates dution. The exclusion of the column and the column are column.	Microchip Tecchemical substreport at g slip on the or semiconductod cannot guaraterial supplie all suppliers lo not include sive, limited p	chnology tance, if atter box and or devices in intee the rs. Supplier formation is trace levels		Doped Silicon  (mg) Total  Gold	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	: 1.47
ompliance with the above EU Directives has been verified to a chemical substance is absent from the list above, the checorporated's knowledge and belief as of the date of this doy, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 fit tp://ul.com/global/eng/pages/offerings/industries/chemical the protective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.  icrochip Technology Incorporated believes the information eir original packing materials is true and correct to the besompleteness and accuracy of data in this form because it formation is often protected from disclosure as trade secretovided only as estimates of the average weight of these particular of the protected from disclosure as trade secretovided only as estimates of the average weight of these particular only incorporated does not provide any warranties provided by Microchip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated	emical substance is NOT an inte- ocument, there is no credible really regulatory scheme world-wide. ammability standard for plastics is/plastics/ ped are made from polyvinyl chlorally in in this form concerning substated of its knowledge and belief, as ass been compiled based on the ets and some information may narts and the average weight of an in silicon devices (silicon IC) in the arranty, express or implied, with and its subsidiaries are contained thanges to Material Content Decline users' reliance on the information	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce.  You can access the UL iQTM family of databases to bride (PVC) plastic. "Window envelopes" used to have seen to be the date listed in this form. Microchip Technology I of the date listed in this form. Microchip Technologranges provided in Material Safety Data Sheets proof have been provided by subcontract assemblers nticipated significant toxic metals components. The finished parts.  respect to the information provided in this declarated in Microchip's standard terms and conditions of arations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages.	ntration of the cook obtain a test old the packing incorporated's: gy Incorporated by raw mand raw materiese estimates dotton. The exclusion. The exclusion. The exclusion incorporated to the cook of	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara naterial supplie al suppliers. It do not include sive, limited p e provided in N	chnology tance, if atter box and r devices in intee the ers. Supplier aformation is trace levels	0.35	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	: 1.47
ompliance with the above EU Directives has been verified to a chemical substance is absent from the list above, the checorporated's knowledge and belief as of the date of this dory, is not below the threshold of regulatory concern for any olding compounds used by Microchip meet the UL94 V0 flat the://ul.com/global/eng/pages/offerings/industries/chemical ne protective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.  Icrochip Technology Incorporated believes the information eir original packing materials is true and correct to the besimpleteness and accuracy of data in this form because it hformation is often protected from disclosure as trade secrovided only as estimates of the average weight of these pridopants, metals, and non-metal materials contained with icrochip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated iotations, sales order acknowledgement, and invoices.	emical substance is NOT an inte- ocument, there is no credible really regulatory scheme world-wide. ammability standard for plastics is/plastics/ ped are made from polyvinyl chlorally in in this form concerning substated of its knowledge and belief, as ass been compiled based on the ets and some information may narts and the average weight of an in silicon devices (silicon IC) in the arranty, express or implied, with and its subsidiaries are contained thanges to Material Content Decline users' reliance on the information	ntional ingredient in the semiconductor device and son to believe that the unavoidable impurity conce.  You can access the UL iQTM family of databases to bride (PVC) plastic. "Window envelopes" used to have seen to be the date listed in this form. Microchip Technology I of the date listed in this form. Microchip Technologranges provided in Material Safety Data Sheets proof have been provided by subcontract assemblers nticipated significant toxic metals components. The finished parts.  respect to the information provided in this declarated in Microchip's standard terms and conditions of arations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages, diarations and shall not be liable for any damages.	ntration of the cook obtain a test old the packing incorporated's: gy Incorporated by raw mand raw materiese estimates dotton. The exclusion. The exclusion. The exclusion incorporated to the cook of	Microchip Tec chemical subs report at g slip on the or semiconducto d cannot guara naterial supplie al suppliers. It do not include sive, limited p e provided in N	chnology tance, if atter box and r devices in intee the ers. Supplier aformation is trace levels	0.35	Doped Silicon  (mg) Total  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 % of Total Weight	: 1.47

MF 8 DFN 10:01 AM : 5/6/2014

MICROCHIP  Semiconductor Device	Type: MD 08 (Lead)	DFN 4x4 (M8)		ination Base opper Alloy (	•		•	geneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	<del>"</del>	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	19.20	(mg) Total	Mold Compound	% ot Total Weight	42.76
Silica, fused	60676-86-0	Mold Compound	38.484	17.279	384,840		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.074	0.931	20,739	Epoxy	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.074	0.931	20,739		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.128	0.058	1,283		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44.970	20.191	449,695			Total	100.00	•
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	0.913	0.410	9,126		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.211	0.095	2,106		Phosphorous	7723-14-0	0.08	
Treated silica	Trade Secret	Die Attach	0.023	0.011	234			Total	100.00	- · · · · · · · · · · · · · · · · · · ·
Heterocyclic organic compound	Trade Secret	Die Attach	0.023	0.011	234	0.53	(mg) Total	Die Attach	% of Total Weight	1.17
Silicon	7440-21-3	Chip (Die)	5.470	2.456	54,700		Silver	7440-22-4	78	
Doped Gold	7440-57-5	Wire Bond	0.320	0.144	3,200		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 F	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.210	1.441	32,100		Treated silica	Trade Secret	2	
		TOTALS:	100.000	44.900	1,000,000	Heter	rocyclic organic compound	Trade Secret	2	
	0.0449 a	Total Mass						Total	100.00	
semiconductor device and its homogenous materials conctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directive 2002	2/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Reca	ast Directive) a	and with EU					
, , , ,				ŕ		2.46	(mg) Total	Chip (Die)	% of Total Weight	5.47
•				hant of Mina		2.46	(mg) Total  Doped Silicon	7440-21-3	% of Total Weight	5.47
· chemical substance is absent from the list above, the cher hnology Incorporated's knowledge and belief as of the dat mical substance, if any, is not below the threshold of regu	mical substance is NOT an te of this document, there is alatory concern for any regu	intentional ingredient in the semiconductor devic s no credible reason to believe that the unavoidal ulatory scheme world-wide.	ole impurity o	concentration	chip of the		Doped Silicon	7440-21-3 Total	100	
chemical substance is absent from the list above, the cher chnology incorporated's knowledge and belief as of the dat emical substance, if any, is not below the threshold of regu Iding compounds used by Microchip meet the UL94 V0 flan p://ul.com/global/eng/pages/offerings/industries/chemicals/	mical substance is NOT an te of this document, there is llatory concern for any regu mmability standard for plast /plastics/	intentional ingredient in the semiconductor devic s no credible reason to believe that the unavoidal alatory scheme world-wide. tics. You can access the UL iQTM family of databa	ole impurity o	concentration	chip of the			7440-21-3	100	0.32
chemical substance is absent from the list above, the cher chnology Incorporated's knowledge and belief as of the dat emical substance, if any, is not below the threshold of regu olding 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	mical substance is NOT an te of this document, there is llatory concern for any regu mmability standard for plast /plastics/	intentional ingredient in the semiconductor devic s no credible reason to believe that the unavoidal alatory scheme world-wide. tics. You can access the UL iQTM family of databa	ole impurity o	concentration	chip of the		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
in chemical substance is absent from the list above, the cher chemical substance is absent from the list above, the cher chnology Incorporated's knowledge and belief as of the dat emical substance, if any, is not below the threshold of reguloiding 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 shipped in a creatine "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in vices in their original packing materials is true and correct arantee the completeness and accuracy of data in this form sterial suppliers. Supplier information is often protected from with the suppliers. Supplier information is often protected from with the suppliers. Information is provided only as estimal ese estimates do not include trace levels of dopants, metal	mical substance is NOT an te of this document, there is allatory concern for any regu- mmability standard for plast /plastics/ ed are made from polyvinyl in this form concerning sub to the best of its knowledge n because it has been comp m disclosure as trade secre tes of the average weight o	intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidal alatory scheme world-wide.  tics. You can access the UL iQTM family of database. The control of the	ole impurity of ases to obtain to hold the ogy Incorpor ochip Techn fety Data She rided by sub- ided significant	oncentration  n a test report  packing slip o  rated's semice  rated's semice  rology Incorpce  ects provided  contract asset  t toxic metals	chip of the at at on the outer conductor orated cannot by raw mblers and		Doped Silicon  (mg) Total	7440-21-3 Total	100 100.00 % of Total Weight	
a chemical substance is absent from the list above, the cher chnology Incorporated's knowledge and belief as of the dat emical substance, if any, is not below the threshold of reguloiding 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 shipped and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information invices in their original packing materials is true and correct arantee the completeness and accuracy of data in this form terial suppliers. Supplier information is often protected from waterial suppliers. Information is provided only as estimal was estimal suppliers.	mical substance is NOT an te of this document, there is a latory concern for any regummability standard for plast //plastics/ ed are made from polyvinyl in this form concerning subto the best of its knowledgen because it has been communications and its and non-metal materials rrranty, express or implied, voorated and its subsidiaries	intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidal alatory scheme world-wide.  tics. You can access the UL iQTM family of database contained (PVC) plastic. "Window envelopes" used better the provided in this form. Microschip Technole and belief, as of the date listed in this form. Microschip date in the storm of these parts and some information may not have been proof these parts and the average weight of anticipate contained within silicon devices (silicon IC) in the with respect to the information provided in this devices the silicon in the selection of the selection of the selection in the se	ole impurity of uses to obtain to hold the ogy Incorpor ochip Technifety Data She ided by subded significant finished par claration. The	oncentration  n a test report  packing slip o  rated's semice cology incorpo eets provided contract asset t toxic metals tts.  ne exclusive, li	chip of the at at on the outer onductor orated cannot by raw mblers and components.	0.14	Doped Silicon  (mg) Total  Doped Gold	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
chemical substance is absent from the list above, the chein hnology Incorporated's knowledge and belief as of the dat mical substance, if any, is not below the threshold of reguing compounds used by Microchip meet the UL94 V0 flan but and compounds used by Microchip meet the UL94 V0 flan but and certain "reals" in which the specific product is shippe and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information is ices in their original packing materials is true and correct rantee the completeness and accuracy of data in this formerial suppliers. Supplier information is often protected froi material suppliers. Supplier information is often protected froi material suppliers. Information is provided only as estimates do not include trace levels of dopants, metal prochip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorp	mical substance is NOT an te of this document, there is allatory concern for any regu- mmability standard for plast (plastics) ed are made from polyvinyl in this form concerning sub- to the best of its knowledge in because it has been comp in disclosure as trade secre tes of the average weight o ls, and non-metal materials rranty, express or implied, is orated and its subsidiaries t invoices. anges to Material Content E users' reliance on the infor-	intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidal alatory scheme world-wide.  Lics. You can access the UL iQTM family of datable chloride (PVC) plastic. "Window envelopes" used be stances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Microchip device and some information may not have been proof these parts and the average weight of anticipate contained within silicon devices (silicon IC) in the with respect to the information provided in this deare contained in Microchip's standard terms and Declarations and shall not be liable for any damage	ole impurity of asses to obtain to hold the ogy Incorport ochip Technifety Data Shrided by sub-disciplation of finished particular of the conditions of es, direct or	concentration  n a test report  packing slip o  rated's semice  tolology Incorpo-  pets provided  contract asset  t toxic metals  rts.  ne exclusive, li  f sale. These  indirect, cons	chip of the  at at  In the outer  Inductor Induc	0.14	Doped 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	100 100.00 % of Total Weight 100	0.32

MD 8 DFN 10:01 AM : 5/6/2014

MICROCHIP  Semiconductor Device	Type: MF 8 (Lead) DFN-S	6x5 mm (A6 / AW)		nation Base A	•		•	ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			37.77	(mg) Total	Mold Compound	% ot Total Weight	49.12
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1	,			
Silica, fused	60676-86-0 Trade Secret	Mold Compound  Mold Compound	44.208 2.382	33.996 1.832	442,080 23.823	F	Silica, fused	60676-86-0 Trade Secret	90.00 4.85	
Epoxy Resin (NLP # 500-033-5) Phenolic Resin	Trade Secret	Mold Compound	2.382	1.832	23,823	Epoxy	Resin (NLP # 500-033-5) Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.147	0.113	1.474		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	42.960	33.036	429,600		Calboli Black	Total	100.00	
Tin	7440-30-8	Lead Frame	0.110	0.085	1,103	33.91	(mg) Total	Lead Frame	% of Total Weight	44.1
Silver	7440-21-3	Lead Frame	0.110	0.646	8.401	33.91	Copper	7440-50-8	97.42	44.1
Zinc	7440-66-6	Lead Frame	0.840	0.061	794		Tin	7440-50-8 7440-31-5	0.25	
Chromium	7440-00-0	Lead Frame	0.110	0.085	1,103		Silver	7440-31-5	1.91	
Silver	7440-22-4	Die Attach	0.320	0.246	3.198		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.320	0.057	738		Chromium	7440-05-0	0.18	
Treated silica	Trade Secret	Die Attach	0.008	0.006	82		Onioman	Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.008	0.006	82	0.32	(mg) Total	Die Attach	% of Total Weight	0.41
Silicon	7440-21-3	Chip (Die)	2.870	2.207	28,700	0.32	Silver	7440-22-4	78	0.41
Gold	7440-57-5	Wire Bond	0.170	0.131	1,700		Acrylate resins Proprietary	Trade Secret	18	
Tin		n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.330	2.561	33.300	í	Treated silica	Trade Secret	2	
1111	7 4 40 01 0 1 latting of	TOTALS:	100.000	76.900	1,000,000	Hotor	rocyclic organic compound	Trade Secret	2	
	0.0769 g Tot		100.000	70.900	1,000,000	петег	ocyclic organic compound	Total	100.00	
						2.21	Total (mg)	Chip (Die)	% of Total Weight	2.87
mpliance with the above EU Directives has been verified v chemical substance is absent from the list above, the ch chology incorporated's knowledge and belief as of the d	emical substance is NOT an inter late of this document, there is no	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable				2.21	Doped Silicon	7440-21-3 Total	100 100.00	2.87
mpliance with the above EU Directives has been verified to chemical substance is absent from the list above, the chamical substance is absent from the list above, the chamical place is a fit of the distance, if any, is not below the threshold of regulatory or ding compounds used by Microchip meet the UL94 V0 flab://ul.com/global/eng/pages/offerings/industries/chemical	nemical substance is NOT an inter late of this document, there is no oncern for any regulatory scheme ammability standard for plastics. Is/plastics/	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide. You can access the UL iQTM family of databas	le impurity con	ncentration of test report at	the chemical	0.13	, ,,	7440-21-3	100	0.17
mpliance with the above EU Directives has been verified von chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the distance, if any, is not below the threshold of regulatory colding compounds used by Microchip meet the UL94 V0 flap://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipp	nemical substance is NOT an inter late of this document, there is no oncern for any regulatory scheme ammability standard for plastics. Is/plastics/	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide. You can access the UL iQTM family of databas	le impurity con	ncentration of test report at	the chemical		Doped Silicon	7440-21-3 Total	100	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified on the chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the distance, if any, is not below the threshold of regulatory colding compounds used by Microchip meet the UL94 V0 flap://ul.com/global/eng/pages/offerings/industries/chemical e protective "tubes" in which the specific product is shipt distant "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information vices in their original packing materials is true and correcarantee the completeness and accuracy of data in this for ppliers. Supplier information is often protected from discleppliers. Information is provided only as estimates of the attimates do not include trace levels of dopants, metals, and	nemical substance is NOT an inter- late of this document, there is no oncern for any regulatory scheme ammability standard for plastics. Is/plastics/ ped are made from polyvinyl chlo in in this form concerning substan- tit to the best of its knowledge and im because it has been compiled osure as trade secrets and some verage weight of these parts and	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide.  You can access the UL iQTM family of databaseride (PVC) plastic. "Window envelopes" used access restricted by RoHS in Microchip Technolog belief, as of the date listed in this form. Microbased on the ranges provided in Material Safe information may not have been provided by set the average weight of anticipated significant.	le impurity cor ses to obtain a to hold the par ogy Incorporate chip Technold ety Data Sheet ubcontract as:	test report at cking slip on t ed's semicono ogy Incorpora s provided by semblers and	the chemical the outer box ductor ted cannot raw material raw material		Doped Silicon  (mg) Total	7440-21-3 Total	100 100.00 % of Total Weight	
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npliance with the above EU Directives has been verified of chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical processes, if any, is not below the threshold of regulatory of ding compounds used by Microchip meet the UL94 V0 flatiful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information ices in their original packing materials is true and correct rantee the completeness and accuracy of data in this for pliers. Supplier information is often protected from disclepting information is provided only as estimates of the armates do not include trace levels of dopants, metals, and rochip Technology Incorporated does not provide any was ranties provided by Microchip Technology Incorporated	nemical substance is NOT an inter- late of this document, there is no oncern for any regulatory scheme ammability standard for plastics.  Is/plastics/ ped are made from polyvinyl chlow in this form concerning substant to the best of its knowledge and the ped sure as trade secrets and some verage weight of these parts and donn-metal materials contained warranty, express or implied, with a and its subsidiaries are contained invoices.  hanges to Material Content Declate users' reliance on the informati	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide.  You can access the UL iQTM family of databaseride (PVC) plastic. "Window envelopes" used to belief, as of the date listed in this form. Microbased on the ranges provided in Material Safinformation may not have been provided by sthe average weight of anticipated significant within silicon devices (silicon IC) in the finisher respect to the information provided in this decid in Microchip's standard terms and condition rations and shall not be liable for any damage	le impurity consess to obtain a to hold the party or to hold the party of the party	ncentration of test report at cking slip on te ed's semicono gy Incorpora' s provided by semblers and omponents. Ti exclusive, limi se are provide	the chemical the outer box ductor ted cannot raw material raw material hese ted product d in uential or	0.13	Doped 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	100 100.00 % of Total Weight 100	0.17
pliance with the above EU Directives has been verified of the memical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the diance, if any, is not below the threshold of regulatory of mig compounds used by Microchip meet the UL94 Volation (Jobal/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.  The chanology Incorporated believes the information es in their original packing materials is true and corrective the completeness and accuracy of data in this for iers. Supplier information is often protected from discliers. Information is provided only as estimates of the arates do not include trace levels of dopants, metals, and chip Technology Incorporated does not provide any winties provided by Microchip Technology Incorporated chip's quotations, sales order acknowledgement, and is chip disclaims any duty to notify users of updates or civise, suffered by users or third parties as a result of the	nemical substance is NOT an inter- late of this document, there is no oncern for any regulatory scheme ammability standard for plastics.  Is/plastics/ ped are made from polyvinyl chlow in this form concerning substant to the best of its knowledge and the ped sure as trade secrets and some verage weight of these parts and donn-metal materials contained warranty, express or implied, with a and its subsidiaries are contained invoices.  hanges to Material Content Declate users' reliance on the informati	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide.  You can access the UL iQTM family of databaseride (PVC) plastic. "Window envelopes" used to belief, as of the date listed in this form. Microbased on the ranges provided in Material Safinformation may not have been provided by sthe average weight of anticipated significant within silicon devices (silicon IC) in the finisher respect to the information provided in this decid in Microchip's standard terms and condition rations and shall not be liable for any damage	le impurity consess to obtain a to hold the party or to hold the party of the party	ncentration of test report at cking slip on te ed's semicono gy Incorpora' s provided by semblers and omponents. Ti exclusive, limi se are provide	the chemical the outer box ductor ted cannot raw material raw material hese ted product d in uential or	0.13	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 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.17

MF 8 DFN-S 10:01 AM : 5/6/2014

Basic Substance	Semiconductor Device	Type: MF 10 (Lead)	DFN 3x3 mm (E2 / EJ)		nation Base A pper Alloy (C	- ,		•	ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Siles, turded   60676-86-0   Mold Compound   7,254   77,114   725,400   Siles, turded   50676-86-0   Mold Compound   3,27   10,388   33,286   Siles   50,000   Siles	Rasic Substance	CAS Number			mg/nart	nnm	19.35	(mg) Total	Mold Compound	% ot Total Weight	80.96
Epoxy Ream RLP # 500-033-5   Trade Secret   Mold Compound   3.927   0.938   3.9266								Silica fused	60676-86-0	90.00	
Phenotic Resin   Trais Secret   Mold Compound   0.24%   0.088   2.086							Fnoxy				
Cashon Black							_pox,				
Siver 7440/24- Lead Frame 0.087 0.021 872 Copper 7409-96-9 Seyled 7409-96-9 Copper 7409-96-96-9 Copper 7409-96-96-9 Copper 7409-96-96-9 Copper 7409-96-96-96-96-96-96-96-96-96-96-96-96-96	Carbon Black	1333-86-4		0.243		2,429		Carbon Black		0.30	
Silver 7440-22-4 Lead Frame 0.087 0.021 672 0.017 707 707 707 707 707 707 707 707 707	Copper			3.544						100.00	u
Silver		7439-89-6	Lead Frame	0.087	0.021	872	0.89	(mg) Total	Lead Frame	% of Total Weight	3.71
Zinc   7440-86-6   Lead Frame   0.003   0.001   45   Phosphorous   7723-14-0   Lead Frame   0.003   0.001   31   Siver   7440-224   De Attach   0.491   0.117   4.914   Acytate resears appointanty   740-86-6   0.13   0.003   0.003   126   Phosphorous   7440-224   De Attach   0.491   0.117   4.914   Acytate resears appointanty   740-86-6   0.13   0.003   126   Phosphorous   7440-224   0.004   0.004   0.003   0.003   126   Phosphorous   7440-27-1   0.004   0.003   0.00							0.00				0
Phosphorous 7729-14-0 Lead Farme 0.003 0.001 31 4 514											
Silver   1440-52-4   Die Attach   O.491   O.117   O.027   1,134											
Actylate resing Proprietary Trade Secret Die Attach 0.113 0.027 1.134 Treated silica Trade Secret Die Attach 0.013 0.003 126 1.5 (mg) Trade Secret Die Attach 0.013 0.003 126 1.5 (mg) Trade Secret Die Attach 0.013 0.003 126 0.5 (mg) Trade Secret Die Attach 0.013 0.003 126 0.5 (mg) Trade Secret Die Attach 0.013 0.003 126 0.5 (mg) Trade Secret Die Attach 0.013 0.003 126 0.5 (mg) Trade Secret Die Attach 0.013 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Secret Die Attach 0.003 0.003 126 0.5 (mg) Trade Die Attach 0.003 0.003 126 0.5 (mg) Trade Die Attach 0.003											
Treated slaica Trade Secret Die Attach 0.013 0.003 126 Heterocyclic organic compound 1 Trade Secret Die Attach 0.013 0.003 126 Sillion 7440;21-3 Chip (Die) 9.200 2.213 92,900 1 7440;75 Paragon administration of the Trade Secret Paragon of Trade Secret Paragon of Trade Secret Paragon Pa											
Heterocyclic organic compound Trade Secret Die Attach 0.013 0.003 126 0.15 (mg) Total Weight 0.63 Silicon 7440-57-5 (Pibe) 9.260 0.213 0.2213 0.2260 0.15 (Silver 740-224 78 0.004 7440-57-5 (Pibe) 1.004 0.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.							l			100.00	y
Silicon 7440-21-3 Chip (Die) 9.280 2.213 92.600 Gold 7440-57-5 Wire Bond 0.820 0.196 8.200 Tin 7440-31-5 Intergou external table plants to the completence and its homogenous materials comply with EU Directive). Beautiful and the semiconductor device and its homogenous materials comply with EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2011/65/EU (RoHS Recast Directiv							0.15	(mg) Total			
Gold 7440:57:5   Wire Bond 10.820   0.198   8.200   1.104   46.200   Truck Secret 10.820   1.104   46.200   Truck Secret 10.820   1.104   46.200   Truck Secret 10.820   Truck Secret 10.8200   Truck Secret 1							0.10				0.00
Tin											
O.0239 g Total Mass  semiconductor device and its homogenous materials comply with EU Directive 2002/98/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU  tive 2002/98/EC (End-d-Life Vehicles (ELV) Directive).  plainace 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 mology 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 inclas substance; if any, 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 ViuL.com/globalleng/pages/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 and certain "reels" may be made from PVC plastic.  Cochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated significant toxic metals on the provided only as estimates of the average weight of these parts and the average weight of micropath parts and the average weight of micropath parts and provided by subcontrated assemblers and accuracy of data in this form because it has been complied based on the ranges provided in Material Safety Data Sheets provided by microphylated by accomplicated by microphylated by							í				
O.0239 g Total Mass  Interview 2002/39/EC (End-of-Life Vehicles (ELV) Directive).  1. Total (mg) Chip (Die) (horizontal Velocity) (Chip (Die)	1111	7440 01 0					Hotor				
semiconductor device and its homogenous materials comply with EU Directive 2001/95/EC (RoHS Directive), EU Directive) 2002/95/EC (RoHS Directive) 2002/95/EC (RoHS Directive), EU Directive) 2001/95/EC (RoHS Directive), EU Directive) 2001/95/EC (RoHS Directive), EU Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Livite 2002/95/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Livite 2002/95/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Livite 2002/95/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Livite 2002/95/EC (RoHS Directive). EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Livite 2002/95/EC (RoHS Directive). EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Livite 2002/95/EC (RoHS Directive). EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Livite 2002/95/EC (RoHS Directive). EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Livite 2011/85/EU (RoHS Recast Directive) and with EU Livite 2011/85/EU (RoHS Directive). EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Livite 2011/85/EU (RoHS Park Security 2011/85/EU (RoHS Recast Directive) and with EU Livite 2011/85/EU (RoHS Park Security 2011/85/EU (RoHS Park				100.000	23.900	1,000,000	пеце	ocyclic organic compound			J
ing compounds used by Microchip meet the UL.94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at //ul.com/global/eng/pages/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 and certain "reels" may be made from PVC plastic.    Gold   7440-57-5   100	, , , ,			•	uot 2 oo to, t	and with LO	2.21	, ,,	,		9.26
and certain "reels" may be made from PVC plastic.    Gold	npliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch hnology Incorporated's knowledge and belief as of the d	emical substance is NOT a late of this document, there	n intentional ingredient in the semiconductor de is no credible reason to believe that the unavoid	ta. vice and, to the	e best of Micro	chip	2.21	, ,,	7440-21-3	100	9.26
sees 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's semiconductor guarantee the 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 subcontract assemblers are material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers are material suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals contained within silicon devices (silicon IC) in the finished parts.  Dechip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided crochip's quotations, sales order acknowledgement, and invoices.  2. 1.10 (mg) Total  2. 1.10 (mg) Total  3. 1.10 (mg) Total  3. 1.10 (mg) Total  4.62 (mg) Total  4.62 (mg) Total  4.62 (mg) Total  5. 100.00  5. 100.00  7. 100.00  7. 100.00  7. 100.00  7. 100.00  7. 100.00  7. 100.00	upliance with the above EU Directives has been verified to the mical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the dimical substance, if any, is not below the threshold of regular compounds used by Microchip meet the UL94 VO flat	emical substance is NOT a late of this document, there gulatory concern for any re- ammability standard for pla	n intentional ingredient in the semiconductor de is no credible reason to believe that the unavoid gulatory scheme world-wide.	ta. vice and, to the dable impurity o	e best of Micro concentration	chip of the		Silicon	7440-21-3 Total	100 100.00	
leads (pins) - Matter Tin / annealed at 150°C for 1 hour	apliance with the above EU Directives has been verified the chemical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the dimical substance, if any, is not below the threshold of regular compounds used by Microchip meet the UL94 V0 flat./ul.com/global/eng/pages/offerings/industries/chemical	emical substance is NOT a late of this document, there gulatory concern for any re- ammability standard for pla is/plastics/	in intentional ingredient in the semiconductor det is no credible reason to believe that the unavoid gulatory scheme world-wide. stics. You can access the UL iQTM family of data	ta. vice and, to the dable impurity ( abases to obtai	e best of Micro concentration in a test report	chip of the		Silicon (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	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  Tin 7440-31-5 100.00  To 7440-31-5 100.00	ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regular compounds used by Microchip meet the UL94 V0 flatiful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. onchip Technology Incorporated believes the information ces in their original packing materials is true and correct out guarantee the completeness and accuracy of data in material suppliers. Supplier information is often protect raw material suppliers. Information is provided only as a	emical substance is NOT a tate of this document, there pulatory concern for any re- ammability standard for pla s/plastics/ ped are made from polyving in in this form concerning si to the best of its knowled this form because it has be def from disclosure as trade estimates of the average we	in intentional ingredient in the semiconductor details no credible reason to believe that the unavoid gulatory scheme world-wide.  Istics. You can access the UL iQTM family of data yl chloride (PVC) plastic. "Window envelopes" usubstances restricted by RoHS in Microchip Techige and belief, as of the date listed in this form. Meen compiled based on the ranges provided in Meen compiled based on the ranges provided in Meen compiled based on the range weight of these parts and the average weight of an	ta.  vice and, to the dable impurity of abases to obtain the dable impurity of abases to obtain the dable in	e best of Micro concentration in a test report packing slip o prated's semico nology Incorpo Data Sheets pr subcontract a ficant toxic me	ochip of the  t at on the outer conductor orated rovided by assemblers stals		Silicon (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight	
Total 100.00	ppliance with the above EU Directives has been verified the chemical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the direction of the chanology incorporated in the compounds used by Microchip meet the UL94 V0 flatifuc compounds used by Microchip meet the UL94 V0 flatifuc in the compounds used by Microchip meet the UL94 V0 flatifuc in the compounds used by Microchip meet the UL94 V0 flatifuc in the compounds in the compound in the compounds in the compound in the compou	emical substance is NOT a ate of this document, there pulatory concern for any re- ammability standard for pla is/plastics/ ped are made from polyving in in this form concerning signature it to the best of its knowled this form because it has be deform disclosure as trade sestimates of the average we dopants, metals, and non- arranty, express or implied porated and its subsidiarie	in intentional ingredient in the semiconductor details no credible reason to believe that the unavoid gulatory scheme world-wide.  Istics. You can access the UL iQTM family of data yl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technige and belief, as of the date listed in this form. Meen compiled based on the ranges provided in Meen compiled based on the ranges provided in Meen compiled based on the ranges weight of an elegith of these parts and the average weight of an metal materials contained within silicon devices of with respect to the information provided in this	ta.  vice and, to the dable impurity of abases to obtain the colony incorpolic rochip Technaterial Safety I en provided by ticipated signiff (silicon IC) in the declaration. The	e best of Micro concentration in a test report packing slip o prated's semico nology Incorpo Data Sheets pr subcontract a ficant toxic me he finished par ne exclusive, li	ochip of the  at at on the outer conductor corated covided by assemblers stals rts. imited	0.20	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	100 100.00 % of Total Weight 100 100.00	0.82
	ppliance with the above EU Directives has been verified chemical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the direct and compounds used by Microchip meet the UL94 V0 flat/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. onchip Technology Incorporated believes the information ces in their original packing materials is true and correct in their original packing materials is true and correct once guarantee the completeness and accuracy of data in material suppliers. Information is often protect raw material suppliers. Information is provided only as a uponents. These estimates do not include trace levels of onchip Technology Incorporated does not provide any water warranties provided by Microchip Technology Incorporated in the provided gement, are onchip disclaims any duty to notify users of updates or corwise, suffered by users or third parties as a result of the	emical substance is NOT a ate of this document, there pulatory concern for any re- ammability standard for pla s/plastics/ ped are made from polyving in in this form concerning sit to the best of its knowled this form because it has be def from disclosure as trade estimates of the average we dopants, metals, and non- arranty, express or implied porated and its subsidiarie ind invoices. hanges to Material Content e users' reliance on the inf	n intentional ingredient in the semiconductor details no credible reason to believe that the unavoid gulatory scheme world-wide.  Istics. You can access the UL iQTM family of data of the control of the	ta.  vice and, to the dable impurity of abases to obtain the control of the contr	e best of Micro concentration in a test report packing slip o varated's semice rology incorpo Data Sheets p subcontract a ficant toxic me he finished pai ne exclusive, li of sale. These	of the  t at  on the outer  onductor  orated  rovided by  ssemblers  tals  trs.  imited  are provided	0.20	Silicon  (mg) Total  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	0.82

MF 10L DFN 10:02 AM : 5/6/2014

Semiconductor Device Types   Me   Separate Depth Acad away   Me   Mes	AICROCHIP				nination Base Copper Alloy			•	nogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Sale Coulsarance	Semiconductor Devic	e Type: MF 08 (pin)	* /	W 1 -1-1							
Silicon (longer)	Rasic Substance	CAS Number			ma/nart	nnm	56.97	(mg) Total	Mold Compound	% ot Total Weight	54.4
Epicory Residual   Spot Control   Procedure   Proced			•					Silica, fused	60676-86-0	90.00	
Carbon Black							1				
Copper	Phenolic Resin	Trade Secret	Mold Compound	2.638	2.763	26,384	1	Phenolic Resin	Trade Secret	4.85	
Triange	Carbon Black	1333-86-4	Mold Compound	0.163	0.171	1,632	1	Carbon Black	1333-86-4	0.30	
Silver	Copper	7440-50-8	Lead Frame		17.168	163,942	1		Total	100.00	
Properties							17.97	(mg) Total	Lead Frame	% of Total Weight	17.16
Procedure   7723-14-0	Silver		Lead Frame	0.327	0.342	3,269		Copper	7440-50-8	95.54	
Copper   74050-8   Cipi Allaciment (92.592.2 PS/SN/Qs)   1.6267   15.3011   1.5261   1.6271   3.544   Propertions   74050-8   Cipi Allaciment (92.592.2 PS/SN/Qs)   0.314   0.311   3.544   Propertions   74050-8   Cipi Allaciment (92.592.2 PS/SN/Qs)   0.314   0.311   1.68   1.579   Cipi Allaciment (92.592.2 PS/SN/Qs)   0.314   0.301   3.430   Cipi Allaciment (92.592.2 PS/SN/Qs)   0.314   0.301   3.430   Cipi Allaciment (92.592.2 PS/SN/Qs)   0.314   0.302   0.302   Cipi Allaciment (92.592.2 PS/SN/Qs)   0.315   0.300   Cip							]				
Final   1743   1743   1744											
April											
Phosphorous 17723-14-0 Clip Attachment (82,5622 PSNA) 0.40 Clip At							1	Phosphorous			
Lead 149-92-1 Cip Attachment (26-525 FBSA/s) 0.346 6.545 (5.345) Silver 1740-22-1 Cip Attachment (26-525 FBSA/s) 0.346 0.355 3.349 Silver 1740-22-1 Cip Attachment (26-525 FBSA/s) 0.346 0.355 3.349 Depend Gold 1740-27-1 Cip Attachment (26-525 FBSA/s) 0.346 3.350 0.355 3.349 Depend Gold 1740-27-1 Cip Attachment (26-525 FBSA/s) 0.346 3.350 0.355 3.349 Tin 1740-27-1 Cip Attachment (26-525 FBSA/s) 0.350								· · · · · · · · · · · · · · · · · · ·			
Silver 7440-22-4 Cip Attachment (26.552 F PBSA(s)) 0.73 0.33 0.350 5.450 1.716 7 1.716	Phosphorous						15.79	(mg) Total		% of Total Weight	15.08
Tim (744-031-5) Cip Attentioned (26,522,52-Pisphage) 1,715   Sillicon (744-027-5) (Pisphage) 1,744-031-5 (Pisphage											
Silicon 7440-21-3 Chip (De) 3.200 3.405 3.200	Silver	7440-22-4		0.343			]	Iron	7439-89-6	2.35	
To A 14-03-15. The putting of the pu											
TOTALS: 100.000 104.720 1,000.								Phosphorous	7723-14-0		
Total Mass  Total	Doped Gold	7440-57-5	Wire Bond	0.830	0.869	8,300			Total	100.00	•
In Class: 100,000 104.720 1,00	Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.380	2.492	23,800		(mg) Total		% of Total Weight	6.86
0.1047 g Total Mass  O.1047 g			TOTALS:	400.000	404700	4 000 000			7400.00.4	00.50	
microductor device and its homogenous materials comply with EU Directive 2025/EC (RoHS Directive) uses EU-RoHS application exemption 7(a): Lead in high melting rature type solders (i.e. leach-base diloys containing 85%; by weight or more lead.  Total  To				100.000	104.720	1,000,000	solder				
Illance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Illance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Illance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Illance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Illance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Illance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  In 1940 1940 1940 1940 1940 1940 1940 1940		0.1047	g Total Mass						7//0-22-/	5.00	
ilance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data.  Total  Tota							_	Silvei	7440-22-4	0.00	
coracted'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 not below the threshold of regulatory concern for any regulatory scheme world-wide.  In one below the threshold of regulatory concern for any regulatory concern the regulatory concerns the unconcerning substances are structed by ROHS in Microchip Technology incorporated cannot guarantee for right and accuracy of data in this form because it has been complied based on the ranges provided by material suppliers. It is an accuracy of data in this form because it has been complied based on the ranges provided by an estimates of the average weight of these parts and the aver				exemption 7	'(a): Lead in hi	gh melting			1		
uit.com/global/eng/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 strain "reles" may be made from PVC plastic.  Total 100.00  Total 100.0	perature type solders (i.e. lead-based alloys containing 8	85% by weight or more lead	ı.	exemption 7	(a): Lead in hi	gh melting			7440-31-5	2.50	
thip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices roriginal packing materials is true and correct to the best of its knowledge and belief, as of the data listed in this form. Microchip Technology Incorporated cannot guarantee 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. It is not to the series of the series and some information may not have been provided by subcontract assemblers and raw material suppliers. It is not to the etrace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  The provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product thies provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this form 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 (SGS) in a certificate of Compliance for semiconductor products.  Total 100.00  Plating on external leads (pins) - Matter Tin hour true to the provided provided in this declaration. The part of the parties of the provided in this declaration in the part of the parties of the provided in this declaration in Material Content Declarations (MCD) or independent third party test reports (SGS)  Total Weight 2.38  Total 2.49 (mg) Total Weight 2.38  Total 3.00.00  Total Weight 2.38  Total 3.00.00  Total Weight 2.38  Total 3.00.00  Total Weight 2.38  Total 3.0	perature type solders (i.e. lead-based alloys containing in pliance with the above EU Directives has been verified themical substance is absent from the list above, the charporated's knowledge and belief as of the date of this di	85% by weight or more lead via internal design controls nemical substance is NOT a locument, there is no credib	d.  s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device at the le reason to believe that the unavoidable impurity con	nd, to the be	est of Microchi	ip Technology	3.45	Tin	7440-31-5	2.50	3.29
ic 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 meleteness 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. Iterinformation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Iterinformation 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 et race 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 Microchip's standard terms and conditions of sale. These are provided in this declaration. The exclusive, limited product the provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this declaration are provided in this declaration. The exclusive, limited product the provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in the provided by users of updates or changes to Material Content Declarations (MCD) or independent third party test reports (SGS) his Certificate of Compliance for semiconductor products.    Doped Gold   7440-57-5   100.00	perature type solders (i.e. lead-based alloys containing in pliance with the above EU Directives has been verified themical substance is absent from the list above, the charporated's knowledge and belief as of the date of this division to below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fi	85% by weight or more lead via internal design controls nemical substance is NOT a ocument, there is no credib ly regulatory scheme world- lammability standard for pla	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device a lole reason to believe that the unavoidable impurity conwide.	nd, to the be	est of Microchi of the chemical	ip Technology I substance, if		Tin (mg) Total	7440-31-5 Total Chip (Die)	2.50 100.00 % of Total Weight	3.29
nties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Chip'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 (SGS) his Certificate of Compliance for semiconductor products.  2.49 (mg) Total Plating on external leads (pins) - Matter Tin / annealed at 150°C for 1 hour  Tin 7440-31-5 100.00	perature type solders (i.e. lead-based alloys containing in pliance with the above EU Directives has been verified themical substance is absent from the list above, the charporated's knowledge and belief as of the date of this dois not below the threshold of regulatory concern for an ting compounds used by Microchip meet the UL94 V0 ft //ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	85% by weight or more lead via internal design controls nemical substance is NOT a ocument, there is no credib y regulatory scheme world- lammability standard for pla als/plastics/	d.  s, supplier declarations, and /or analytical test data.  in intentional ingredient in the semiconductor device at the le reason to believe that the unavoidable impurity conwide.  astics. You can access the UL iQTM family of database	nd, to the be centration o	est of Microchi of the chemical a test report at	ip Technology I substance, if		Tin (mg) Total	7440-31-5 Total Chip (Die) 7440-21-3	2.50 100.00 % of Total Weight	3.29
in puts announced 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) his Certificate of Compliance for semiconductor products.  2.49 (mg) Total  Plating on external leads (pins) - Matter Tin / annealed at 150°C for 1 hour  Tin 7440-31-5 100.00	perature type solders (i.e. lead-based alloys containing in pliance with the above EU Directives has been verified chemical substance is absent from the list above, the charporated's knowledge and belief as of the date of this divided in the context of the street of the substance of the substance is absent from the list above, the charporated's knowledge and belief as of the date of this divided in the substance of the substanc	85% by weight or more lead via internal design controls nemical substance is NOT a locument, there is no credibly regulatory scheme world-lammability standard for plats/plastics/ uped are made from polyvin in in this form concerning select the selection of its knowledge and be it has been compiled base trade secrets and some info	d.  s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device a ple reason to believe that the unavoidable impurity conwide.  astics. You can access the UL iQTM family of database yl chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchip Technology and the ranges provided in Material Safety Data Shee wirmation may not have been provided by subcontract a average weight of anticipated significant toxic metals:	nd, to the becentration o s to obtain a hold the pa y Incorporat nology inco ts provided ssemblers a	est of Microchi of the chemical a test report at acking slip on the ed's semicone rporated cann by raw materi and raw materi	ip Technology I substance, if t the outer box ductor devices of guarantee al suppliers. ial suppliers.	Doped Silicon	Tin  (mg) Total  Doped Silicon	7440-31-5 Total Chip (Die) 7440-21-3 Total	2.50 100.00 % of Total Weight 100 100.00	
2.49 (mg) Total   leads (pins) - Matte Tin / annealed at 150°C for 1   % of Total Weight   2.38   hour	erature type solders (i.e. lead-based alloys containing is pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cheporated's knowledge and belief as of the date of this dis 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 protective "tubes" in which the specific product is ship tertain "reels" may be made from PVC plastic.  Techip Technology Incorporated believes the information is roriginal packing materials is true and correct to the lompleteness and accuracy of data in this form because lier information is often protected from disclosure as the mation is provided only as estimates of the average we detrace levels of dopants, metals, and non-metal mate sochip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated materials provided by Microchip Technology Incorporated materials provided by Microchip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated	85% by weight or more lead via internal design controls nemical substance is NOT a ocument, there is no credibly regulatory scheme world-lammability standard for plats/plastics/ uped are made from polyvin in in this form concerning septions of its knowledge and be it has been compiled base trade secrets and some infolight of these parts and the brials contained within silicovarranty, express or implied and its subsidiaries are coil	d.  s, supplier declarations, and /or analytical test data.  in intentional ingredient in the semiconductor device a ble reason to believe that the unavoidable impurity conwide.  astics. You can access the UL iQTM family of database yl chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technologielief, as of the date listed in this form. Microchip Technologielief, as of the date listed in this form. Microchip Technologielief, as of the date listed in thaterial Safety Data Shee rimation may not have been provided by subcontract a average weight of anticipated significant toxic metals on devices (silicon IC) in the finished parts.	nd, to the becentration o s to obtain a hold the pa y incorporat nology inco s provided ssemblers a components	est of Microchi of the chemical a test report at acking slip on the ed's semicone rporated cann by raw materi and raw materi s. These estim exclusive, limi exclusive, limi	ip Technology I substance, if t the outer box ductor devices of guarantea al suppliers. ial suppliers. ates do not	Doped Silicon	Tin  (mg) Total  Doped Silicon  (mg) Total	7440-31-5 Total Chip (Die) 7440-21-3 Total Wire Bond	2.50  100.00  % of Total Weight  100  100.00  % of Total Weight	
	perature type solders (i.e. lead-based alloys containing is pliance with the above EU Directives has been verified hemical substance is absent from the list above, the chroporated's knowledge and belief as of the date of this dis 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 certain "reels" may be made from PVC plastic.  Dechip Technology Incorporated believes the information eir original packing materials is true and correct to the lompleteness and accuracy of data in this form because olier information is provided only as estimates of the average we dide trace levels of dopants, metals, and non-metal mate occhip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated cochip's quotations, sales order acknowledgement, and occhip disclaims any duty to notify users of updates or crwise, suffered by users or third parties as a result of the results.	via internal design controls via internal design controls nemical substance is NOT a ocument, there is no credibly regulatory scheme world-lammability standard for plats/plastics/ uped are made from polyving in in this form concerning subset of its knowledge and be it has been compiled base trade secrets and some infoeight of these parts and the rirals contained within silicon varranty, express or implied and its subsidiaries are colinvoices.  changes to Material Conteme users' reliance on the info	s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device at le reason to believe that the unavoidable impurity conwide.  In intentional ingredient in the semiconductor device at le reason to believe that the unavoidable impurity conwide.  In intentional construction in the intention in the intention in under the intention in	nd, to the becentration of sto obtain a hold the particular provided seemblers a components of sale. The direct or integration of sale of sale of sale.	est of Microchi of the chemical a test report at acking slip on the ced's semicon reporated cann by raw materi and raw materi s. These estim exclusive, limi se are provided	ip Technology I substance, if t the outer box ductor devices ot guarantee al suppliers. ial suppliers. ates do not ited product d in uential or	Doped Silicon	Tin  (mg) Total  Doped Silicon  (mg) Total	7440-31-5  Total  Chip (Die)  7440-21-3  Total  Wire Bond  7440-57-5	2.50  100.00  % of Total Weight  100  100.00  % of Total Weight	
	erature type solders (i.e. lead-based alloys containing is pliance with the above EU Directives has been verified hemical substance is absent from the list above, the cheporated's knowledge and belief as of the date of this dis 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 tertain "reels" may be made from PVC plastic.  Inchip Technology Incorporated believes the informationistroriginal packing materials is true and correct to the impleteness and accuracy of data in this form becausilier information is often protected from disclosure as the mation is provided only as estimates of the average we de trace levels of dopants, metals, and non-metal mate white provided by Microchip Technology Incorporated does not provide any we mites provided by Microchip Technology Incorporated chip's quotations, sales order acknowledgement, and bothip disclaims any duty to notify users of updates or cwise, suffered by users or third parties as a result of the wise, 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 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 of updates or constitutions.	via internal design controls via internal design controls nemical substance is NOT a ocument, there is no credibly regulatory scheme world-lammability standard for plats/plastics/ uped are made from polyving in in this form concerning subset of its knowledge and be it has been compiled base trade secrets and some infoeight of these parts and the rirals contained within silicon varranty, express or implied and its subsidiaries are colinvoices.  changes to Material Conteme users' reliance on the info	s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device at le reason to believe that the unavoidable impurity conwide.  In intentional ingredient in the semiconductor device at le reason to believe that the unavoidable impurity conwide.  In intentional construction in the intention in the intention in under the intention in	nd, to the becentration of sto obtain a hold the particular provided seemblers a components of sale. The direct or integration of sale of sale of sale.	est of Microchi of the chemical a test report at acking slip on the ced's semicon reporated cann by raw materi and raw materi s. These estim exclusive, limi se are provided	ip Technology I substance, if t the outer box ductor devices ot guarantee al suppliers. ial suppliers. ates do not ited product d in uential or	Doped Silicon	(mg) Total  Doped Silicon  (mg) Total  Doped 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 hour	2.50  100.00  % of Total Weight  100  100.00  % of Total Weight  100.00	0.83

MF 08 PDFN 10:02 AM : 5/6/2014

AICROCHIP  Semiconductor Device	e Type: MYY 06 (Lead)	TDFN 2x2x0.8mm (4Q)		nation Base pper Alloy (0			•	ogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e4
David Cultura	CAC Number	"Contained In" Sub-Component	% Total Weight			7.20	(mg) Total	Mold Compound	% ot Total Weight	59.97
Basic Substance	CAS Number			mg/part	ppm					
Silica, vitreous (or fused) Epoxy Resin	60676-86-0 Trade Secret	Mold Compound  Mold Compound	50.975 5.217	6.117 0.626	509,745 52,174		Silica, vitreous (or fused)	60676-86-0 Trade Secret	85.00 8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.598	0.626	35,982		Epoxy Resin Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.180	0.432	1,799		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	32.712	3.925	327.123		Carbon Black	Total	100.00	
Iron	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		0.093	841	4.03				33.02
Phosphorous Zinc (Metal)	7/23-14-0 7440-66-0	Lead Frame Lead Frame	0.084 0.050	0.010	841 504		Copper	7440-50-8 7439-89-6	97.30 2.30	
Silver				0.006	8.856		Iron			
Epoxy Resin	7440-22-4 9003-36-5	Die Attach Die Attach	0.886 0.226	0.106	2,256		Phosphorous Zinc (Metal)	7723-14-0 7440-66-0	0.25 0.15	
							Zinc (ivietai)			
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	
Gold	7440-57-5	Wire Bond	0.770	0.092	7,700		t-Butyl phenyl glycidyl ether	3101-60-8	6	
Nickel	7440-02-0	Plating on external leads (pins)	0.406	0.049	4.064		Phenolic hardener	92-88-6	0	
Palladium	7440-05-03	Plating on external leads (pins)	0.022	0.003	215		Butvl cellosolve acetate	112-07-2	1	
Gold	7440-57-5	Plating on external leads (pins)	0.002	0.000	22			Total	100.00	
<del>,</del>	1	TOTALS		12.000	1,000,000	0.48	Total (mg)	Chip (Die)	% of Total Weight	4.01
	0.0120 a T					0.10				
							Donad Ciliaan	7440 24 2	100	
	comply with EU Directive 2002/9	otal Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Dire	ective) and w	ith EU		Doped Silicon	7440-21-3 <b>Total</b>	100 <b>100.00</b>	
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 cl	comply with EU Directive 2002/9 via internal design controls, supermical substance is NOT an internal design controls.	5/EC (RoHS Directive), EU Directive 2011/65/EU (Ro oplier declarations, and /or analytical test data. entional ingredient in the semiconductor device an	d, to the best o	of Microchip 1	Гесhnology	0.09	Doped Silicon  (mg) Total  Doped Gold			0.77
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the clorporated's knowledge and belief as of the date of this did, is not below the threshold of regulatory concern for an	via internal design controls, su nemical substance is NOT an int locument, there is no credible re by regulatory scheme world-wide	5/EC (RoHS Directive), EU Directive 2011/65/EU (Ro oplier declarations, and /or analytical test data. entional ingredient in the semiconductor device an ason to believe that the unavoidable impurity conc	d, to the best centration of the	of Microchip 1 e chemical su	Гесhnology	0.09	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight	0.77
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the cloprorated's knowledge and belief as of the date of this did, is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 for/ul.com/global/eng/pages/offerings/industries/chemical	via internal design controls, su nemical substance is NOT an inti ocument, there is no credible re ny regulatory scheme world-widd lammability standard for plastic als/plastics/	S/EC (RoHS Directive), EU Directive 2011/65/EU (Ropplier declarations, and /or analytical test data.  entional ingredient in the semiconductor device an ason to believe that the unavoidable impurity conc.  b.  s. You can access the UL iQTM family of databases	d, to the best of the to obtain a test	of Microchip 1 e chemical su et report at	Fechnology Ibstance, if	0.09	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.77
nctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the clopporated's knowledge and belief as of the date of this dis 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/chemics.	via internal design controls, su nemical substance is NOT an inti ocument, there is no credible re ny regulatory scheme world-widd lammability standard for plastic als/plastics/	S/EC (RoHS Directive), EU Directive 2011/65/EU (Ropplier declarations, and /or analytical test data.  entional ingredient in the semiconductor device an ason to believe that the unavoidable impurity conc.  b.  s. You can access the UL iQTM family of databases	d, to the best of the to obtain a test	of Microchip 1 e chemical su et report at	Fechnology Ibstance, if	0.09	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight	0.77
s semiconductor device and its homogenous materials sective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Impliance with the above EU Directives has been verified chemical substance is absent from the list above, the clorporated's knowledge and belief as of the date of this directive, in the compounds used by Microchip meet the UL94 V0 for/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the informationeir original packing materials is true and correct to the completeness and accuracy of data in this form becaus upiler information is often protected from disclosure as gomation is provided only as estimates of the average we used trace levels of dopants, metals, and non-metal mate	via internal design controls, sunemical substance is NOT an intimocument, there is no credible re by regulatory scheme world-wide lammability standard for plastic als/plastics/ uped are made from polyvinyl cham in this form concerning substates to fits knowledge and belief e it has been compiled based or trade secrets and some informatelight of these parts and the aver	S/EC (ROHS Directive), EU Directive 2011/65/EU (Ropplier declarations, and /or analytical test data.  entional ingredient in the semiconductor device an ason to believe that the unavoidable impurity conc. b.  s. You can access the UL iQTM family of databases loride (PVC) plastic. "Window envelopes" used to lances restricted by RoHS in Microchip Technology, as of the date listed in this form. Microchip Techn the ranges provided in Material Safety Data Sheet ition may not have been provided by subcontract as age weight of anticipated significant toxic metals c	d, to the best of entration of the to obtain a test nold the packin Incorporated's ology Incorpor is provided by its	of Microchip 1 e chemical su at report at ag slip on the s semiconduc ated cannot aw material s raw material s	outer box ctor devices guarantee suppliers. suppliers.		(mg) Total  Doped Gold	Total Wire Bond 7440-57-5 Total Platting 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 verified chemical substance is absent from the list above, the clorporated's knowledge and belief as of the date of this ding compounds used by Microchip meet the UL94 V0 for/ful.com/global/eng/pages/offerings/industries/chemicate protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic.  rochip Technology Incorporated believes the informationier 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 immation is provided only as estimates of the average we	via internal design controls, supermical substance is NOT an intocument, there is no credible re ty regulatory scheme world-wide lammability standard for plastic als/plastics/ sped are made from polyvinyl characteristics of its knowledge and belief e it has been compiled based or trade secrets and some informatically of these parts and the average of the contained within silicon with and its subsidiaries are contained with and its subsidiaries are contained.	S/EC (RoHS Directive), EU Directive 2011/65/EU (Robplier declarations, and /or analytical test data. entional ingredient in the semiconductor device an ason to believe that the unavoidable impurity conces.  S. You can access the UL iQTM family of databases loride (PVC) plastic. "Window envelopes" used to lances restricted by RoHS in Microchip Technology, as of the date listed in this form. Microchip Techn the ranges provided in Material Safety Data Sheetion may not have been provided by subcontract as age weight of anticipated significant toxic metals civices (silicon IC) in the finished parts.	d, to the best of entration of the to obtain a test hold the packin incorporated's ology incorpor is provided by is semblers and omponents. Ti	of Microchip To e chemical substitute of the control of the contro	outer box ctor devices guarantee suppliers. suppliers. se do not		(mg) Total  Doped Gold  (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	% of Total Weight 100 100.00 % of Total Weight	
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 classification of the date of this distribution of the date of the d	via internal design controls, supermical substance is NOT an intocument, there is no credible re yregulatory scheme world-wide lammability standard for plasticals/plastics/ oped are made from polyvinyl charm in this form concerning substantials of its knowledge and belief e it has been compiled based or trade secrets and some informatight of these parts and the averarials contained within silicon devarranty, express or implied, with and its subsidiaries are contain invoices.  changes to Material Content Deen e users' reliance on the informatical substantial content Deen eusers' reliance on the informatical substantial	S/EC (RoHS Directive), EU Directive 2011/65/EU (Ropplier declarations, and /or analytical test data. entional ingredient in the semiconductor device an ason to believe that the unavoidable impurity conces.  s. You can access the UL iQTM family of databases loride (PVC) plastic. "Window envelopes" used to lances restricted by RoHS in Microchip Technology, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheetion may not have been provided by subcontract as age weight of anticipated significant toxic metals cevices (silicon IC) in the finished parts.  h respect to the information provided in this declared in Microchip's standard terms and conditions o clarations and shall not be liable for any damages, clarations and shall not be liable for any damages, clarations and shall not be liable for any damages, clarations and shall not be liable for any damages, clarations and shall not be liable for any damages, clarations are supported in this declared in Microchip's standard terms and conditions of clarations and shall not be liable for any damages, clarations are supported in this declared in Microchip's standard terms and conditions of clarations and shall not be liable for any damages, clarations are supported in this declared in this declare	d, to the best of entration of the to obtain a test and the packin lincorporated to logy incorporate by semblers and omponents. The action. The excit sale. These a direct or indirect	of Microchip To e chemical substance of the conduction of the cond	outer box ctor devices guarantee suppliers. suppliers. se do not		(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	
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 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  ///////////////////////////////////	via internal design controls, supermical substance is NOT an intocument, there is no credible re yregulatory scheme world-wide lammability standard for plasticals/plastics/ oped are made from polyvinyl charm in this form concerning substantials of its knowledge and belief e it has been compiled based or trade secrets and some informatight of these parts and the averarials contained within silicon devarranty, express or implied, with and its subsidiaries are contain invoices.  changes to Material Content Deen e users' reliance on the informatical substantial content Deen eusers' reliance on the informatical substantial	S/EC (RoHS Directive), EU Directive 2011/65/EU (Ropplier declarations, and /or analytical test data. entional ingredient in the semiconductor device an ason to believe that the unavoidable impurity conces.  s. You can access the UL iQTM family of databases loride (PVC) plastic. "Window envelopes" used to lances restricted by RoHS in Microchip Technology, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheetion may not have been provided by subcontract as age weight of anticipated significant toxic metals cevices (silicon IC) in the finished parts.  h respect to the information provided in this declared in Microchip's standard terms and conditions o clarations and shall not be liable for any damages, clarations and shall not be liable for any damages, clarations and shall not be liable for any damages, clarations and shall not be liable for any damages, clarations and shall not be liable for any damages, clarations are supported in this declared in Microchip's standard terms and conditions of clarations and shall not be liable for any damages, clarations are supported in this declared in Microchip's standard terms and conditions of clarations and shall not be liable for any damages, clarations are supported in this declared in this declare	d, to the best of entration of the to obtain a test and the packin lincorporated to logy incorporate by semblers and omponents. The action. The excit sale. These a direct or indirect	of Microchip To e chemical substance of the conduction of the cond	outer box ctor devices guarantee suppliers. suppliers. se do not		(mg) Total  Doped Gold  (mg) Total  Nickel	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0 7440-05-3	100.00 % of Total Weight 100 100.00 % of Total Weight 94.50	

MYY 06 TDFN NIPdAu 10:02 AM : 5/6/2014

ICROCHIP Semiconductor Device	eType: MNY 08 TD	EN 2020 8mm (50)		ntion Base A per Alloy (Cu	•		•	nogeneous Materials: e.g. pc boards, display	/s)	JEDEC 97 Produc Marking and/or Pkg. Labeling e4
Semiconductor Device	riype. Willi do 10	"Contained In"			1					
Basic Substance	CAS Number	Sub-Component	% Total Weight	mg/part	ppm	8.40	(mg) Total	Mold Compound	% ot Total Weight	59.97
Silica, vitreous (or fused)	60676-86-0	Mold Compound	50.975	7.136	509,745		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.217	0.730	52,174		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.598	0.504	35,982		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.180	0.025	1,799		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	32.712	4.580	327,123			Total	100.00	
Iron	7439-89-6	Lead Frame	0.773	0.108	7,733	4.71	(mg) Total	Lead Frame	% of Total Weight	33.62
Phosphorous	7723-14-0	Lead Frame	0.084	0.012	841		Copper	7440-50-8	97.30	
Zinc (Metal)	7440-66-0	Lead Frame	0.050	0.007	504		Iron	7439-89-6	2.30	
Silver	7440-22-4	Die Attach	0.936	0.131	9,360		Phosphorous	7723-14-0	0.25	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.216	0.030	2,160		Zinc (Metal)	7440-66-0	0.15	
Treated silica	Trade Secret	Die Attach	0.024	0.003	240			Total	100.00	-
Heterocyclic organic compound	Trade Secret	Die Attach	0.024	0.003	240	0.17	(mg) Total	Die Attach	% of Total Weight	1.2
Silicon	7440-21-3	Chip (Die)	4.010	0.561	40,100		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.770	0.108	7,700		Acrylate resins Proprietary	Trade Secret	18	
Nickel	7440-02-0	Plating on external leads (pins)	0.412	0.058	4,116		Treated silica	Trade Secret	2	
Palladium	5/3/7440	Plating on external leads (pins)	0.014	0.002	139	Hete	erocyclic organic compound	Trade Secret	2	
	7440-57-5	Distinct on a standard in the standard (size)	0.004	0.001	45			Total	100.00	•
Gold	7440-57-5	Plating on external leads (pins)	0.004	0.001						
Gold	7440-57-5	TOTA		14.000	1,000,000	0.56	Total (mg)	Chip (Die)	% of Total Weight	4.01
niconductor device and its homogenous materials co	0.0140 g	TOTA Total Mass	S: 100.000	14.000	1,000,000	0.56	Total (mg)  Doped Silicon		% of Total Weight 100 100.00	4.01
emiconductor device and its homogenous materials cove 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.0140 g omply with EU Directive 2002/9 ia internal design controls, su	TOTA Total Mass 95/EC (RoHS Directive), EU Directive 2011/65 ppplier declarations, and /or analytical test da	S: 100.000  EU (RoHS Recast Dir	14.000 rective) and w	1,000,000 vith EU	0.56		Chip (Die) 7440-21-3	100	
miconductor device and its homogenous materials co e 2002/53/EC (End-of-Life Vehicles (ELV) Directive). unce with the above EU Directives has been verified v mical substance is absent from the list above, the che rated's knowledge and belief as of the date of this do	0.0140 g omply with EU Directive 2002/9 ia internal design controls, su omical substance is NOT an in cument, there is no credible re	TOTA Total Mass 95/EC (RoHS Directive), EU Directive 2011/65 pplier declarations, and /or analytical test da tentional ingredient in the semiconductor de bason to believe that the unavoidable impurit	S: 100.000  EU (RoHS Recast Directa.	14.000 rective) and w	1,000,000 with EU Technology		Doped Silicon	Chip (Die) 7440-21-3 Total	100	
niconductor device and its homogenous materials con a 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Ince with the above EU Directives has been verified vehical substance is absent from the list above, the characted's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any compounds used by Microchip meet the UL94 V0 fla	0.0140 g  mply with EU Directive 2002/9  ia internal design controls, su  emical substance is NOT an in  cument, there is no credible re  regulatory scheme world-wid  mmability standard for plastic	TOTA Total Mass 95/EC (RoHS Directive), EU Directive 2011/65 pplier declarations, and /or analytical test da tentional ingredient in the semiconductor de pason to believe that the unavoidable impurit e.	S: 100.000  EU (RoHS Recast Director)  ta.  vice and, to the best of the concentration of the	14.000 rective) and w of Microchip	1,000,000 with EU Technology		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
miconductor device and its homogenous materials co e 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified v mical substance is absent from the list above, the che rated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any j compounds used by Microchip meet the UL94 V0 fla .com/global/eng/pages/offerings/industries/chemicals tective "tubes" in which the specific product is shipp	0.0140 g comply with EU Directive 2002/9 ia internal design controls, su comical substance is NOT an in cument, there is no credible re regulatory scheme world-wid mmability standard for plastic s/plastics/	TOTA  Total Mass  95/EC (RoHS Directive), EU Directive 2011/65  pplier declarations, and /or analytical test da  tentional ingredient in the semiconductor de eason to believe that the unavoidable impuril e.  ss. You can access the UL iQTM family of dat	S: 100.000  EU (RoHS Recast Director)  ta.  vice and, to the best of concentration of the abases to obtain a term	14.000 rective) and w of Microchip e chemical su st report at	1,000,000  vith EU  Technology ubstance, if		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.77
miconductor device and its homogenous materials or re 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified v mical substance is absent from the list above, the cherated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any g compounds used by Microchip meet the UL94 V0 fla com/global/eng/pages/offerings/industries/chemicals bective "tubes" in which the specific product is shipp tain "reels" may be made from PVC plastic.  Thip Technology Incorporated believes the information original packing materials is true and correct to the bupleteness and accuracy of data in this form because in information is often protected from disclosure as truttion is provided only as estimates of the average weight in the structure of the sureage weight in the structure of the sureage weight in the structure of the sureage weight in the	0.0140 g  mply with EU Directive 2002/9  ia internal design controls, su  mical substance is NOT an in  cument, there is no credible re  regulatory scheme world-wid  mmability standard for plastic  s/plastics/  ed are made from polyvinyl ch  in this form concerning subst  est of its knowledge and belie  it has been compiled based o  ade secrets and some informa  ght of these parts and the ave-	TOTA  Total Mass  D5/EC (RoHS Directive), EU Directive 2011/65  pplier declarations, and /or analytical test de tentional ingredient in the semiconductor de eason to believe that the unavoidable impurile. e. s. You can access the UL iQTM family of dat hloride (PVC) plastic. "Window envelopes" u tances restricted by RoHS in Microchip Tech ff, as of the date listed in this form. Microchip in the ranges provided in Material Safety Dat tion may not have been provided by subcon rage weight of anticipated significant toxic in	EU (RoHS Recast Direction of the abases to obtain a tested to hold the packing the abases to obtain a tested to hold the packing the abases to obtain a tested to hold the packing the abases to obtain a tested to hold the packing the abases to obtain a tested to hold the packing the abases to obtain a tested to hold the packing the abase to obtain a tested to hold the packing the abase to obtain a tested to ob	14.000 rective) and w of Microchip e chemical st st report at ng slip on the s semiconduc rated cannot raw material raw material	1,000,000  rith EU  Technology ubstance, if  outer box  ctor devices guarantee suppliers. suppliers.	0.11	Doped Silicon  (mg) Total  Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total  Plating on external leads	100 100.00 % of Total Weight 100	0.77
emiconductor device and its homogenous materials or ve 2002/53/FC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified vermical substance is absent from the list above, the che orated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any ag compounds used by Microchip meet the UL94 V0 fla al.com/global/eng/pages/offerings/industries/chemicals otective "tubes" in which the specific product is shipp pretain "reels" may be made from PVC plastic.  Thip Technology Incorporated believes the information or original packing materials is true and correct to the best made in the storm because or information is often protected from disclosure as traction is provided only as estimates of the average weight action is provided only as estimates of the average weight action is provided only as estimates of the average weight action is provided only as estimates of the average weight action is provided only as estimates of the average weight action is provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the average weight actions of the provided only as estimates of the action of the provided only as estimates of the provided only as estimates of	o.0140 g omply with EU Directive 2002/9 ia internal design controls, su omical substance is NOT an in cument, there is no credible re regulatory scheme world-wid mmability standard for plastic s/plastics/ ied are made from polyvinyl ch in this form concerning subst est of its knowledge and belie it has been compiled based o ade secrets and some inform afth of these parts and the ave ials contained within silicon de rrranty, express or implied, wit and its subsidiaries are contain	TOTA  Total Mass  D5/EC (RoHS Directive), EU Directive 2011/65  pplier declarations, and /or analytical test de tentional ingredient in the semiconductor de eason to believe that the unavoidable impurile.  Is. You can access the UL iQTM family of dat ances restricted by RoHS in Microchip Tech fi, as of the date listed in this form. Microchip in the ranges provided in Material Safety Dat tion may not have been provided by subcon rage weight of anticipated significant toxic me evices (silicon IC) in the finished parts.	S: 100.000  EU (RoHS Recast Dir  ta.  vice and, to the best of the second of the secon	of Microchip e chemical su st report at semiconduc rated cannot raw material raw material hese estimate lusive, limited	1,000,000  vith EU  Technology ubstance, if outer box ctor devices guarantee suppliers. suppliers. se do not	0.11	Doped Silicon  (mg) Total  Doped Gold  (mg) Total	Chip (Die) 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	0.77
emiconductor device and its homogenous materials of ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). I ance with the above EU Directives has been verified vehicles (substance is absent from the list above, the cheorated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any g compounds used by Microchip meet the UL94 V0 fla l.com/global/eng/pages/offerings/industries/chemicals of the control of the c	0.0140 g pemply with EU Directive 2002/9 ia internal design controls, su pemical substance is NOT an in cument, there is no credible re regulatory scheme world-wid mmability standard for plastic s/plastics/ ed are made from polyvinyl ch in this form concerning subst est of its knowledge and belie it has been compiled based or ade secrets and some informa ght of these parts and the ave- ials contained within silicon de rrranty, express or implied, wit und its subsidiaries are contain vicices. hanges to Material Content De- e users' reliance on the inform	TOTA  Total Mass  Dof/EC (RoHS Directive), EU Directive 2011/65  pplier declarations, and /or analytical test datentional ingredient in the semiconductor deason to believe that the unavoidable impurite.  Is. You can access the UL iQTM family of datender of the datender	S: 100.000  EU (RoHS Recast Direction of the season of the	of Microchip of e chemical substrate and substrate annot raw material hese estimate lusive, limited inct, conseque	1,000,000  rith EU  Technology ubstance, if  outer box  ctor devices guarantee suppliers. suppliers. suppliers. side on to the product of the	0.11	Doped Silicon  (mg) Total  Doped Gold  (mg) Total  Nickel	Chip (Die) 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 95.73	0.77

MNY 8 TDFN 10:03 AM : 5/6/2014

AICROCHIP  Somiconductor Dovi	ce Type: 08 TDFN 2x3x0.75mn	- (10)		ation Base A	•		•	nogeneous Materials: e.g. pc boards, display	ys)	JEDEC 97 Produc Marking and/or Pkg. Labeling e4
Semiconductor Devi	ce Type. US TDFN 2x3x0.75mn	"Contained In"	% Total	1						
Basic Substance	CAS Number	Sub-Component	% Total Weight	mg/part	ppm	25.74	(mg) Total	Mold Compound	% ot 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	7723-14-0	Lead Frame	0.101	0.049	1,011		Copper	7440-50-8	97.30	
Zinc (Metal)	7440-44-0	Lead Frame	0.061	0.029	606		Iron	7439-89-6	2.30	
Silver	7440-22-4	Die Attach	0.146	0.071	1,463		Phosphorous	7723-14-0	0.25	
Epoxy resin	Trade Secret	Die Attach	0.038	0.018	380		Zinc (Metal)	7440-44-0	0.15	
Metal oxide	Trade Secret	Die Attach	0.006	0.003	57			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	7440-57-5	Wire Bond	0.560	0.272	5,600		Silver	7440-22-4	77	
Nickel	7440-02-0	Plating on external leads (pins)	1.584	0.768	15,840		Epoxy resin	Trade Secret	20	
Palladium	7440-05-3	Plating on external leads (pins)	0.088	0.043	880		Metal oxide	Trade Secret	3	
Gold	7440-57-5	Plating on external leads (pins)	0.088	0.043	880			Total	100.00	•
	•	TOTALS	: 100.000	48.500	1,000,000	1.93	Total (mg)	Chip (Die)	% of Total Weight	3.98
	0.040E - T									
	comply with EU Directive 2002/95/	otal Mass EC (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Direc	ctive) and with	ı EU		Dope Silicon	7440-21-3 Total	100	
semiconductor device and its homogenous materials ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) appliance with the above EU Directives has been verified.	comply with EU Directive 2002/95/	EC (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Direc	ctive) and with	ı EU	0.27	Dope Silicon  (mg) Total			0.56
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 co porated's knowledge and belief as of the date of this of	comply with EU Directive 2002/95// 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 (Ro dier declarations, and /or analytical test data. ntional ingredient in the semiconductor device an	d, to the best of	Microchip Te	chnology	0.27		Total	100.00	0.56
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 coporated's knowledge and belief as of the date of this compounds the threshold of regulatory concern for a ling compounds used by Microchip meet the UL94 Vol	comply with EU Directive 2002/95// via internal design controls, supp hemical substance is NOT an inter locument, there is no credible reas by regulatory scheme world-wide. lammability 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 an son to believe that the unavoidable impurity conc	d, to the best of entration of the	Microchip Te	chnology	0.27	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.56
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	comply with EU Directive 2002/95// via internal design controls, supp hemical substance is NOT an inter locument, there is no credible reas by regulatory scheme world-wide. lammability standard for plastics. als/plastics/	EC (RoHS Directive), EU Directive 2011/65/EU (Ro olier declarations, and /or analytical test data. Intional ingredient in the semiconductor device an son to believe that the unavoidable impurity conc You can access the UL iQTM family of databases	d, to the best of entration of the to obtain a test	Microchip Te chemical sub- report at	chnology stance, if	0.27	(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.56
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 operated's knowledge and belief as of the date of this dis not below the threshold of regulatory concern for aing compounds used by Microchip meet the UL94 Volul.com/global/eng/pages/offerings/industries/chemicorotective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic.  Sochip Technology Incorporated believes the information original packing materials is true and correct to the beleteness and accuracy of data in this form because it biller information is often protected from disclosure as mation is provided only as estimates of the average we	via internal design controls, supp hemical substance is NOT an inter locument, there is no credible reas ny regulatory scheme world-wide. lammability standard for plastics. als/plastics/ upped are made from polyvinyl chlo on in this form concerning substan est of its knowledge and belief, as has been compiled based on the r trade secrets and some informatio eight of these parts and the average	EC (RoHS Directive), EU Directive 2011/65/EU (Roblet (	d, to the best of entration of the to obtain a test to obtain a test told the packing incorporated's significant or the semblers and resemblers and resemblers and resemblers and resemblers and resemblers and resemblers and resemblers.	Microchip Te chemical substreport at slip on the or semiconductor d cannot guar atterial supplif w material supplif	chnology stance, if uter box ir devices in antee the ers. uppliers.		(mg) Total  Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external leads	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 themical substance is absent from the list above, the croorated's knowledge and belief as of the date of this cis not below the threshold of regulatory concern for all inig compounds used by Microchip meet the UL94 Volul.com/global/eng/pages/offerings/industries/chemic-protective "tubes" in which the specific product is ship	via internal design controls, supp hemical substance is NOT an inter locument, there is no credible reas ny regulatory scheme world-wide. lammability standard for plastics. als/plastics/ oped are made from polyvinyl chlo on in this form concerning substan est of its knowledge and belief, as has been compiled based on the r trade secrets and some informatio eight of these parts and the average rals contained within silicon devi	EC (RoHS Directive), EU Directive 2011/65/EU (Roblet (	d, to the best of entration of the to obtain a test to obtain a test told the packing incorporated's sogy incorporated by raw members and ramponents. The attion. The exclustion.	Microchip Te chemical sub- report at slip on the or semiconducto d cannot guar aterial suppli w material sus se estimates	chnology stance, if uter box or devices in antee the ers. do not		(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	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) iliance with the above EU Directives has been verified the microstate of the date of this deported in the list above, the coorated's knowledge and belief as of the date of this deported in the list above, the coorated's knowledge and belief as of the date of this deported in the list above, the coorated's knowledge and belief as of the date of this deported in the list above, the coorated in the list above, the list and corrective "tubes" in which the specific product is shipertain "reels" may be made from PVC plastic. The letter in the list and correct to the beleteness and accuracy of data in this form because it let information is often protected from disclosure as anation is provided only as estimates of the average we let trace levels of dopants, metals, and non-metal matchip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated the list and the list and the provided by Microchip Technology Incorporated the list and the list and the provided by Microchip Technology Incorporated the list and the list and the provided by Microchip Technology Incorporated the list and the	via internal design controls, supp hemical substance is NOT an inter locument, there is no credible reas by regulatory scheme world-wide. lammability standard for plastics. als/plastics/ oped are made from polyvinyl chlo on in this form concerning substan est of its knowledge and belief, as has been compiled based on the r trade secrets and some informatio eight of these parts and the average rais contained within silicon devi	EC (RoHS Directive), EU Directive 2011/65/EU (Roblet (	d, to the best of entration of the to obtain a test to obtain a test to did the packing incorporated's significant or a semblers and rapponents. The exclusion. The exclusion. These are	Microchip Te chemical sub- report at slip on the or camiconducto d cannot guar atterial suppli w material sus e estimates ive, limited p provided in I	chnology stance, if uter box or devices in antee the ers. uppliers. do not eroduct Microchip's ial 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 90.00	

08 TDFN 2x3x0.75mm 10:03 AM : 5/6/2014

MICROCHIP  Semiconductor D	Device Type: QAE 8 (Lead	) <b>TDFN-S</b> 6x5x0.8mm (U3)		nation Base /			•	geneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	38.82	(mg) Total	Mold Compound	% ot Total Weight	52.6
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	Enoxy	Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.551	1.883	25,511	Ероху	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.158	0.116	1,578		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	38.215	28.203	382,150		Odiboli black	Total	100.00	
Iron	7439-89-6	Lead Frame	0.940	0.694	9,400	29.52	(mg) Total	Lead Frame	% of Total Weight	40
Silver	7440-22-4	Lead Frame	0.762	0.562	7.620	29.52	Copper	7440-50-8	95.54	40
Zinc	7440-22-4	Lead Frame	0.762	0.037	500		Iron	7440-50-8	2.35	
Phosphorous	7723-14-0	Lead Frame	0.033	0.037	330		Silver	7439-89-6	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.704	0.520	7,040 1.496		Zinc	7440-66-6	0.13	
Epoxy Resin	Trade Secret	Die Attach	0.150	0.110	,		Phosphorous	7723-14-0	0.08	
Copper ( Cu )	7440-50-8	Die Attach	0.026	0.019	264			Total	100.00	
Silicon	7440-21-3	Chip (Die)	5.140	3.793	51,400	0.65	(mg) Total	Die Attach	% of Total Weight	0.88
Gold	7440-57-5	Wire Bond	0.270	0.199	2,700		Silver (Ag)	7440-22-4	80	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.110	0.819	11,100		Epoxy Resin	Trade Secret	17	
		TOTALS:	100.000	73.800	1,000,000		Copper (Cu)	7440-50-8	3	
	0.0738	g Total Mass				-		Total	100.00	
s semiconductor device and its homogenous mate	erials comply with FII Directive 2	0002/05/EC (Balle Directive) Ell Directive 2014/65/Ell								
, , ,	ctive).	,	RoHS Recast	Directive) and	I with EU	3.79	Total (mg)	Chip (Die)	% of Total Weight	5.14
ompliance with the above EU Directives has been ve	ctive). erified via internal design contro	ls, supplier declarations, and /or analytical test data.	•	•		3.79	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight	5.14
mpliance with the above EU Directives has been von the list above, a chemical substance is absent from the list above, chnology incorporated's knowledge and belief as constance, if any, is not below the threshold of regula	ctive).  erified via internal design contro  the chemical substance is NOT  of the date of this document, the  atory concern for any regulatory	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable	and, to the be e impurity cor	est of Microch ncentration of	ip the chemical		Doped Silicon	7440-21-3 Total	100	
mpliance with the above EU Directives has been von chemical substance is absent from the list above, chnology Incorporated's knowledge and belief as on bstance, if any, is not below the threshold of regular Iding compounds used by Microchip meet the UL9 p://ul.com/global/eng/pages/offerings/industries/ch	ctive).  erified via internal design contro  the chemical substance is NOT of the date of this document, the atory concern for any regulatory 4 V0 flammability standard for p nemicals/plastics/	Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable scheme world-wide.  lastics. You can access the UL iQTM family of databas	and, to the be e impurity cor ses to obtain a	est of Microch acentration of a test report at	ip the chemical	0.20		7440-21-3	100	0.27
. a chemical substance is absent from the list above, schnology Incorporated's knowledge and belief as cubstance, if any, is not below the threshold of regulabling compounds used by Microchip meet the UL9 tp://ul.com/global/eng/pages/offerings/industries/ct	ctive).  erified via internal design contro  the chemical substance is NOT of the date of this document, the atory concern for any regulatory 4 V0 flammability standard for p nemicals/plastics/	Is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable scheme world-wide.	and, to the be e impurity cor ses to obtain a	est of Microch acentration of a test report at	ip the chemical		Doped Silicon	7440-21-3 Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
ompliance with the above EU Directives has been want and chemical substance is absent from the list above, schnology Incorporated's knowledge and belief as obstance, if any, is not below the threshold of regulability of the protective substance, if any, is not below the threshold of regulability. It is not below the threshold of regulability. It is not below the protective "tubes" in which the specific product in different certain "reels" may be made from PVC plastic. It is not protective the protective substance in their original packing materials is true and larantee the completeness and accuracy of data in pipliers. Supplier information is often protected froi pipliers. Information is provided only as estimates of	ctive).  erified via internal design contro the chemical substance is NOT of the date of this document, the atory concern for any regulatory 4 V0 flammability standard for p nemicals/plastics/ is shipped are made from polyvia  rmation in this form concerning a correct to the best of its knowle this form because it has been co m disclosure as trade secrets an of the average weight of these pa	Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable scheme world-wide.  lastics. You can access the UL iQTM family of databas	and, to the be e impurity cor- ses to obtain a co hold the paractic processory in the contract as both contract as oxic metals coxic me	est of Microch icentration of a test report at cking slip on t ed's semicono gy Incorpora s provided by semblers and	ip the chemical he outer box ductor ted cannot raw material raw material		Doped Silicon  (mg) Total	7440-21-3 Total	100 100.00 % of Total Weight	
empliance with the above EU Directives has been vot a chemical substance is absent from the list above, chnology Incorporated's knowledge and belief as obstance, if any, is not below the threshold of regulability of the product of the product of the product of the product of certain "reels" in which the specific product of certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the inforvices in their original packing materials is true and arantee the completeness and accuracy of data in ppliers. Supplier information is provided only as estimates of timates do not include trace levels of dopants, metcrochip Technology Incorporated does not provide	ctive).  erified via internal design contro the chemical substance is NOT of the date of this document, the atory concern for any regulatory 4 V0 flammability standard for p nemicals/plastics/ is shipped are made from polyvia  rmation in this form concerning correct to the best of its knowle this form because it has been co m disclosure as trade secrets an of the average weight of these pa als, and non-metal materials con e any warranty, express or implie orated and its subsidiaries are c	Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable scheme world-wide.  lastics. You can access the UL iQTM family of databas nyl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technolo edge and belief, as of the date listed in this form. Micro ompiled based on the ranges provided in Material Safe d some information may not have been provided by su arts and the average weight of anticipated significant to	and, to the be e impurity cor- ses to obtain a co hold the paractic properties of the paractic properties of the propert	est of Microch ncentration of test report at cking slip on t ed's semicono ogy Incorpora s provided by semblers and omponents. Ti	ip the chemical he outer box ductor ted cannot raw material raw material nese		Doped Silicon  (mg) Total  Doped Gold  (mg) Total	7440-21-3 Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
mpliance with the above EU Directives has been we chemical substance is absent from the list above, thrology incorporated's knowledge and belief as constance, if any, is not below the threshold of regular ding compounds used by Microchip meet the UL9:  "//ul.com/global/eng/pages/offerings/industries/chapterings/industries/chapterings/offerings/industries/chapterings/industries/chapterings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/industries/chapterings/offerings/indu	ctive).  erified via internal design contro the chemical substance is NOT of the date of this document, the atory concern for any regulatory 4 V0 flammability standard for p nemicals/plastics/ is shipped are made from polyvia  rmation in this form concerning: correct to the best of its knowle this form because it has been con midisclosure as trade secrets an of the average weight of these pa als, and non-metal materials con any warranty, express or implie orated and its subsidiaries are con to, and invoices.  es or changes to Material Contei alt of the users' reliance on the lie	Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable scheme world-wide.  lastics. You can access the UL iQTM family of databas myl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technoloodge and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safe do some information may not have been provided by su arts and the average weight of anticipated significant to stained within silicon devices (silicon IC) in the finished and, with respect to the information provided in this decid, with respect to the information provided in this decid,	and, to the be e impurity cor ses to obtain a so hold the party Data Sheet ubcontract as so coin metals of a parts.  Ilaration. The so f sale. These, direct or ince	est of Microch icentration of test report at cking slip on t ed's semicond ogy Incorporate s provided by semblers and imponents. The exclusive, limit se are provide	the chemical the chemical the outer box ductor ted cannot raw material raw material nese ted product d in uential or	0.20	Doped Silicon  (mg) Total  Doped Gold  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5  Total  Plating on external eads (pins) - Matte Tin annealed at 150°C for 1 hour  7440-31-5	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.27
pliance with the above EU Directives has been we chemical substance is absent from the list above, anology Incorporated's knowledge and belief as catance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL9. If ul. com/global/eng/pages/offerings/industries/chemotective "tubes" in which the specific producticertain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the inforces in their original packing materials is true and antee the completeness and accuracy of data in obliers. Supplier information is often protected from the prote	ctive).  erified via internal design contro the chemical substance is NOT of the date of this document, the atory concern for any regulatory 4 V0 flammability standard for p nemicals/plastics/ is shipped are made from polyvia  rmation in this form concerning: correct to the best of its knowle this form because it has been con midisclosure as trade secrets an of the average weight of these pa als, and non-metal materials con any warranty, express or implie orated and its subsidiaries are con to, and invoices.  es or changes to Material Contei alt of the users' reliance on the lie	Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable scheme world-wide.  lastics. You can access the UL iQTM family of database myl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technoloologe and belief, as of the date listed in this form. Microchipiled based on the ranges provided in Material Safe ad some information may not have been provided by starts and the average weight of anticipated significant to tatained within silicon devices (silicon IC) in the finished ad, with respect to the information provided in this decontained in Microchip's standard terms and conditions.	and, to the be e impurity cor ses to obtain a so hold the party Data Sheet ubcontract as so coin metals of a parts.  Ilaration. The so f sale. These, direct or ince	est of Microch icentration of test report at cking slip on t ed's semicond ogy Incorporate s provided by semblers and imponents. The exclusive, limit se are provide	the chemical the chemical the outer box ductor ted cannot raw material raw material nese ted product d in uential or	0.20	Doped Silicon  (mg) Total  Doped Gold  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total  Plating on external eads (pins) - Matte Tin annealed at 150°C for Lour	100 100.00 % of Total Weight 100 100.00	0.27

QAE 8 TDFN-S 10:03 AM : 5/6/2014

AICROCHIP  Semiconductor Device	Type: Q2AE 08 (Lead) TD	DFN-S 6x8x0.8mm (S9)		nation Base A				geneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	<u> </u>	"Contained In"	% Total			52.55	(mg) Total	Mold Compound	% ot Total Weight	37.14
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		, 0,		• • • • • • • • • • • • • • • • • • • •	
Fused Silica	60676-86-0	Mold Compound	32.869	46.509	328,689		Fused Silica	60676-86-0	88.50	
Epoxy Resin 1 Phenol Resin	Trade Secret Trade Secret	Mold Compound  Mold Compound	2.414 1.764	3.416 2.496	24,141 17.642		Epoxy Resin Phenol Resin	Trade Secret Trade Secret	6.50 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	l	Calbuil Black	Total	100.00	1
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	73.02	Copper	7440-50-8	91.03	32.17
Zinc	7440-66-6	Lead Frame	0.177	0.251	1,774		Silver	7440-20-6	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	Ц
Acrylate	Trade secret	Die Attach	0.069	0.097	688	1.77	(mg) Total	Die Attach	% of Total Weight	
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	ne derivative & copolymer	Trade secret	6.50	
Tin		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 Tot					•		Total	100.00	_
s semiconductor device and its homogenous materials co	mply with FU Directive 2002/95/	IEC (Daue Divactiva) ELI Divactiva 2011/6E/ELL								
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		/EC (ROHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	with EU	11.04	Total (mg)	Chip (Die)	% of Total Weight	7.8
, , , ,		,	(RoHS Recast	Directive) and	with EU	11.04	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.8
mpliance with the above EU Directives has been verified vi chemical substance is absent from the list above, the che	ia internal design controls, supp mical substance is NOT an inte	plier declarations, and /or analytical test data.	and, to the be	est of Microchi	p	11.04	` "		1	
npliance with the above EU Directives has been verified vi chemical substance is absent from the list above, the che hnology Incorporated's knowledge and belief as of the da	ia internal design controls, supp mical substance is NOT an inte te of this document, there is no	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device o credible reason to believe that the unavoidable	and, to the be	est of Microchi	p	11.04	` "	7440-21-3	100	
pliance with the above EU Directives has been verified vi chemical substance is absent from the list above, the che hnology Incorporated's knowledge and belief as of the da stance, if any, is not below the threshold of regulatory count ding compounds used by Microchip meet the UL94 V0 flar	ia internal design controls, supp mical substance is NOT an inte te of this document, there is no ncern for any regulatory schem mmability standard for plastics.	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device o credible reason to believe that the unavoidable world-wide.	e and, to the be	est of Microchi ncentration of	p the chemical	0.06	` "	7440-21-3	100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified vi chemical substance is absent from the list above, the che chnology Incorporated's knowledge and belief as of the da stance, if any, is not below the threshold of regulatory coi iding compounds used by Microchip meet the UL94 V0 flar by/ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipped dicertain "reels" may be made from PVC plastic.	ia internal design controls, supportion in a substance is NOT an inte te of this document, there is no neern for any regulatory schem mmability standard for plastics.	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide.  You can access the UL iQTM family of database	e and, to the be le impurity con ses to obtain a	est of Microchi ncentration of n test report at	p the chemical		Doped Silicon	7440-21-3 Total	100	
mpliance with the above EU Directives has been verified vinchemical substance is absent from the list above, the che chnology incorporated's knowledge and belief as of the day ostance, if any, is not below the threshold of regulatory coulding compounds used by Microchip meet the UL94 V0 flar or://ul.com/global/eng/pages/offerings/industries/chemicals are protective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic.  Torochip Technology Incorporated believes the information rices in their original packing materials is true and correct arantee the completeness and accuracy of data in this form poliers. Information is often protected from discloppliers. Information is provided only as estimates of the average of the second control of the average of the average of the second control of the average of the ave	ia internal design controls, supp mical substance is NOT an inte te of this document, there is no neern for any regulatory schem mmability standard for plastics. //plastics/ ed are made from polyvinyl chlo in this form concerning substar to the best of its knowledge and n because it has been compiled sure as trade secrets and some erage weight of these parts and	plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device oredible reason to believe that the unavoidable world-wide.  You can access the UL iQTM family of database oride (PVC) plastic. "Window envelopes" used the semicondient of the data listed in this form. Micro d based on the ranges provided in Material Safe information may not have been provided by s if the average weight of anticipated significant	e and, to the be le impurity con ses to obtain a to hold the pace objective and the pace objective and the pace objective and the pace objective and the pace objective and the pace objective and the pace objective and the pace ob	est of Microchi ncentration of a test report at cking slip on t ed's semiconc ggy Incorporat s provided by semblers and	p the chemical he outer box luctor ed cannot raw material raw material		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.04
mpliance with the above EU Directives has been verified vi chemical substance is absent from the list above, the che chnology Incorporated's knowledge and belief as of the da stance, if any, is not below the threshold of regulatory coi Iding compounds used by Microchip meet the UL94 V0 flar o://ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shippe	ia internal design controls, supported in internal design controls, supported in interes is not control for any regulatory schem immability standard for plastics. In interes in	plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device oredible reason to believe that the unavoidable world-wide.  You can access the UL iQTM family of database oride (PVC) plastic. "Window envelopes" used the sestricted by RoHS in Microchip Technolo delief, as of the date listed in this form. Micro delief, as of the date listed in this form. Micro delief, as of the date listed in this form. Micro delief, as of the date listed in this form. Micro delief, as of the date listed in this form. Micro delief, as of the date listed in this form. Micro delief, as of the date listed in this form. Micro delief, as of the date listed in this form. Micro delief, as of the date listed in this form.  It is not the semicondition in the finishe decrease of the semicondition in this decrease or the semicondition in the decrease of the semicondition in the decrease of the semicondition in the semicondition in the decrease of the semicondition in the semico	e and, to the be le impurity con- ses to obtain a to hold the pac- order properties obtained by Data Sheet ubcontract as- toxic metals co d parts.	est of Microchi ncentration of a test report at cking slip on t ed's semicono ogy Incorporat s provided by semblers and omponents. The	p the chemical he outer box luctor ed cannot raw material raw material lesse		Doped Silicon  (mg) Total  Doped Gold  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	0.04
piliance with the above EU Directives has been verified vichemical substance is absent from the list above, the che hnology Incorporated's knowledge and belief as of the da stance, if any, is not below the threshold of regulatory coiding compounds used by Microchip meet the UL.94 V0 flat c/l/ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shippe certain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information ices in their original packing materials is true and correct rantee the completeness and accuracy of data in this form pilers. Supplier information is often protected from disclopliers. Information is often protected from disclopliers. Information is provided only as estimates of the average and the provided on the include trace levels of dopants, metals, and the provided by Microchip Technology Incorporated and varianties provided by Microchip Technology Incorporated and the control of the provided and the provided by Microchip Technology Incorporated and the control of the control of the provided by Microchip Technology Incorporated and the control of the	ia internal design controls, supp mical substance is NOT an inte te of this document, there is no ncern for any regulatory schem mmability standard for plastics. /plastics/ ed are made from polyvinyl chlo in this form concerning substar to the best of its knowledge an to the best of its knowledge an sure as trade secrets and some erage weight of these parts and non-metal materials contained variation, express or implied, with not its subsidiaries are contained voices.	plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device oredible reason to believe that the unavoidable world-wide. You can access the UL iQTM family of database oride (PVC) plastic. "Window envelopes" used notes restricted by RoHS in Microchip Technolo d belief, as of the date listed in this form. Micro d based on the ranges provided in Material Safe information may not have been provided by s d the average weight of anticipated significant of within silicon devices (silicon IC) in the finishe respect to the information provided in this deced in Microchip's standard terms and condition arations and shall not be liable for any damage	e and, to the bele impurity consess to obtain a to hold the particular to hold the hold	est of Microchincentration of a test report at cking slip on ted's semiconcopy Incorporates provided by semblers and omponents. The exclusive, limits are provide direct, consequing the contract of the contr	p the chemical he outer box luctor ed cannot raw material raw material sese ed product d in	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	100 100.00 % of Total Weight 100 100.00	1.6

Q2AE 08 TDFN-S 10:04 AM : 5/6/2014

Semiconductor Device	e Type: QAF 08 (Lead)	FDFN-S 6x5x0.8 mm (9A)		nation Base A pper Alloy (Cu	,		•	ogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e4
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	38.79	(mg) Total	Mold Compound	% ot Total Weight	51.17
Silica, vitreous (or fused)	60676-86-0	Mold Compound	43.495	32.969	434,945		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.452	3.374	44.518		Epoxy Resin	Trade Secret	8.70	
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		•	Total	100.00	
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		Copper	7440-50-8	97.30	
Zinc (Metal)	7440-66-0	Lead Frame	0.058	0.044	581		Iron	7439-89-6	2.30	
Silver	7440-22-4	Die Attach	1.051	0.797	10,508		Phosphorous	7723-14-0	0.25	
Epoxy resin	Trade Secret	Die Attach	0.284	0.215	2,840		Zinc (Metal)	7440-66-0	0.15	
Metal oxide	Trade Secret	Die Attach	0.043	0.032	426			Total	100.00	
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	7440-05-03	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	100.00	
		TOTALS:	100.000	75.800	1,000,000	6.23	Total (mg)	Chip (Die)	% of Total Weight	8.22
	0.0758 g To				,,		Doped Silicon	7440-21-3	100	
miconductor device and its homogenous materials one 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2002/9	5/EC (RoHS Directive), EU Directive 2011/65/EU (Ro	oHS Recast Dire	ctive) and with	n EU			Total	100.00	
ance with the above EU Directives has been verified	via internal design controls, sur	pplier declarations, and /or analytical test data.				0.20	(mg) Total	Wire Bond	% of Total Weight	0.26
emical substance is absent from the list above, the ch porated's knowledge and belief as of the date of this de s not below the threshold of regulatory concern for an	locument, there is no credible re	ason to believe that the unavoidable impurity conc					Doped Gold	7440-57-5		
g compounds used by Microchip meet the UL94 V0 fl Il.com/global/eng/pages/offerings/industries/chemica		s. You can access the UL iQTM family of databases							100	
			s to obtain a tes	t report at				Total	100	
	ped are made from polyvinyl ch	loride (PVC) plastic. "Window envelopes" used to		·	uter box and	0.16	(mg) Total	Total Plating on external leads (pins)		0.21
n "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information original packing materials is true and correct to the beleteness and accuracy of data in this form because it I nation is often protected from disclosure as trade secrivided only as estimates of the average weight of these	on in this form concerning substa ist of its knowledge and belief, a has been compiled based on the rets and some information may i e parts and the average weight o	ances restricted by RoHS in Microchip Technology s of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets pr not have been provided by subcontract assemblers f anticipated significant toxic metals components.	hold the packin r Incorporated's ogy Incorporate ovided by raw r s and raw mater	g slip on the or semiconducto d cannot guara naterial supplie ial suppliers. In	or devices in antee the ers. Supplier nformation	0.16	(mg) Total Nickel	Plating on external	100.00	0.21
rotective "tubes" in which the specific product is ship in "reels" may be made from PVC plastic.  chip Technology Incorporated believes the informatio original packing materials is true and correct to the be- ileteness and accuracy of data in this form because it it nation is often protected from disclosure as trade secretided only as estimates of the average weight of these is of dopants, metals, and non-metal materials containe chip Technology Incorporated does not provide any wittes provided by Microchip Technology Incorporated titons, sales order acknowledgement, and invoices.	on in this form concerning substates of its knowledge and belief, as has been compiled based on the rets and some information may e parts and the average weight card within silicon devices (silicon varranty, express or implied, witl	ances restricted by RoHS in Microchip Technology s of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets pro to thave been provided by subcontract assemblers of anticipated significant toxic metals components. IC) in the finished parts.	hold the packin Incorporated's ogy Incorporate ovided by raw r s and raw mater These estimate	g slip on the or semiconducto d cannot guara naterial supplie ial suppliers. It is do not includ	or devices in antee the ers. Supplier nformation de trace	0.16		Plating on external leads (pins)	100.00 % of Total Weight	0.21
n "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information riginal packing materials is true and correct to the beleteness and accuracy of data in this form because it hation is often protected from disclosure as trade secreted only as estimates of the average weight of these of dopants, metals, and non-metal materials containe thip Technology Incorporated does not provide any wittes provided by Microchip Technology Incorporated	on in this form concerning substates of its knowledge and belief, as has been compiled based on the rets and some information may e parts and the average weight of the distribution of the concerning of the content of	ances restricted by RoHS in Microchip Technology s of the date listed in this form. Microchip Technology ranges provided in Material Safety Data Sheets proof have been provided by subcontract assemblers f anticipated significant toxic metals components. IC) in the finished parts.  It respect to the information provided in this declar ed in Microchip's standard terms and conditions o larations and shall not be liable for any damages,	hold the packin Incorporated's ogy Incorporate ovided by raw r s and raw mater These estimate ration. The exclu of sale. These ar direct or indirec	g slip on the or semiconducto d cannot guara naterial suppliers. In sid on tinclud usive, limited p e provided in N	or devices in antee the ers. Supplier information de trace roduct Microchip's	0.16	Nickel	Plating on external leads (pins)  7440-02-0	100.00 % of Total Weight 94.50	0.21

QAF 8 TDFN-WSON 10:04 AM : 5/6/2014

Semiconductor Device	∍Type: MN/HC/LC	: 10 (Lead) TDFN 3x3x0.8mm (QA)		nation Base A				eneous Materials: . pc boards, displays)		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			12.60	(mg) Total	Mold Compound	% ot Total Weight	60.00
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	12.00				00.00
Silica, vitreous (or fused)	60676-86-0	Mold Compound	51.000	10.710	510,000		Silica, vitreous (or fused)		85.00	
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		
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	-
Phenolic hardener	92-88-6	Die Attach	0.000	0.000	2	0.02	(mg) Total	Die Attach	% of Total Weight	0.08
Butyl cellosolve 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 ethe	3101-60-8	6.30	
Tie	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	0.630	30,000		Phenolic hardener	92-88-6	0.30	
Tin										
TIN	7440-31-3	TOTALS:	100.000	21.000	1,000,000		Butyl cellosolve acetate	112-07-2	1	
	0.0210	TOTALS: g Total Mass	100.000		,,		Butyl cellosolve acetate	112-07-2 Total	1 100.00	
emiconductor device and its homogenous materials ove 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.0210 omply with EU Directive 2	TOTALS: g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	100.000		,,	1.01	(mg) Total	Total Chip (Die)	% of Total Weight	4.82
semiconductor device and its homogenous materials of tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.0210 omply with EU Directive 2	TOTALS: g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	100.000 S Recast Dire	ective) and wit	h EU	1.01	•	Total	% of Total Weight	4.82
emiconductor device and its homogenous materials of the 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified emical substance is absent from the list above, the chorated's knowledge and belief as of the date of this distributed in the lower than the list above the chorated's knowledge and belief as of the date of this distributed in the lower than the list above.	0.0210 omply with EU Directive 20 via internal design control emical substance is NOT a coument, there is no credil y regulatory scheme world	g Total Mass  002/95/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, ple reason to believe that the unavoidable impurity concenwide.	100.000  S Recast Dire  to the best or  tration of the	f Microchip Te	h EU	1.01	(mg) Total	Total Chip (Die) 7440-21-3	% of Total Weight	4.82
semiconductor device and its homogenous materials of tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Dilance with the above EU Directives has been verified nemical substance is absent from the list above, the chorated's knowledge and belief as of the date of this ds not below the threshold of regulatory concern for an ing compounds used by Microchip meet the UL94 V0 fi	0.0210 omply with EU Directive 2 via internal design control emical substance is NOT a coument, there is no credil y regulatory scheme world ammability standard for pl	g Total Mass 002/95/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, ble reason to believe that the unavoidable impurity concen	100.000  S Recast Dire  to the best or  tration of the	f Microchip Te	h EU	0.02	(mg) Total	Total Chip (Die) 7440-21-3	% of Total Weight	
semiconductor device and its homogenous materials of tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Dilance with the above EU Directives has been verified nemical substance is absent from the list above, the chorated's knowledge and belief as of the date of this distort of the cholon 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	0.0210 omply with EU Directive 20 via internal design control emical substance is NOT a comment, there is no credil or regulatory scheme world ammability standard for pl s/plastics/	g Total Mass  002/95/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, ple reason to believe that the unavoidable impurity concenwide.	100.000  6 Recast Director the best or tration of the best or tration of the probability	octive) and wit f Microchip Te e chemical sub t report at	h EU echnology ostance, if		(mg) Total  Doped Silicon	Total Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
semiconductor device and its homogenous materials of the 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 chiporated's knowledge and belief as of the date of this dis not below the threshold of regulatory concern for an ing compounds used by Microchip meet the UL94 V0 fl/ful.com/global/eng/ages/offerings/industries/chemica protective "tubes" in which the specific product is ship pertain "reels" may be made from PVC plastic.	0.0210 omply with EU Directive 20 via internal design control emical substance is NOT a ocument, there is no credil or regulatory scheme world ammability standard for pl s/plastics/ oed are made from polyvir on in this form concerning s oest of its knowledge and i it has been compiled bas rade secrets and some info ight of these parts and the	g Total Mass  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, ble reason to believe that the unavoidable impurity concenwide.  astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hout bubstances restricted by RoHS in Microchip Technology In belief, as of the date listed in this form. Microchip Technolog don the ranges provided in Material Safety Data Sheets pormation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	to the best of tration of the obtain a test of the packing corporated's pay lincorporated by a miles and revided by a miles and remisers and remiser	f Microchip Te e chemical sub t report at g slip on the c semiconduct ated cannot g aw material su	chnology pstance, if pouter box or devices uarantee uppliers. uppliers.		(mg) Total  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight 100.00	
semiconductor device and its homogenous materials of 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 cheorated's knowledge and belief as of the date of this dis not below the threshold of regulatory concern for an ing compounds used by Microchip meet the UL94 V0 fl/fl/Loom/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship pertain "reels" may be made from PVC plastic.  The protective "tubes in which the specific product is ship pertain "reels" may be made from PVC plastic.  The protective in the information or offer protected from disclosure as the information is often protected from disclosure as the mation is provided only as estimates of the average we de trace levels of dopants, metals, and non-metal mate occhip Technology Incorporated does not provide any we	0.0210 omply with EU Directive 2 via internal design control emical substance is NOT a bocument, there is no credil regulatory scheme world ammability standard for pl s/plastics/ ped are made from polyvir in in this form concerning s best of its knowledge and it it has been compiled bas rade secrets and some infe ight of these parts and the iritals contained within silic arranty, express or implied and its subsidiaries are co	g Total Mass  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, ble reason to believe that the unavoidable impurity concenwide.  astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to hout bubstances restricted by RoHS in Microchip Technology In belief, as of the date listed in this form. Microchip Technolog don the ranges provided in Material Safety Data Sheets pormation may not have been provided by subcontract asse average weight of anticipated significant toxic metals con	to the best of tration of the obtain a test of the packin corporated's poly lncorporated by remblers and reponents. The exclusion.	f Microchip To chemical sub t report at g slip on the of semiconduct ated cannot g aw material su aw material su ese estimates	chnology stance, if puter box or devices uarantee uppliers. uppliers. do not		(mg) Total  Doped 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	
emiconductor device and its homogenous materials of ive 2002/53/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 chorated's knowledge and belief as of the date of this distance with the showledge and belief as of the date of this distance of the content of the con	0.0210 omply with EU Directive 20 via internal design control emical substance is NOT a comment, there is no credit y regulatory scheme world ammability standard for pl s/plastics/ ped are made from polyvir the in this form concerning s pest of its knowledge and it to it has been compiled bas and secrets and some infe ight of these parts and the rials contained within silic arranty, express or implied and its subsidiaries are co invoices.  hanges to Material Conter e users' reliance on the in-	g Total Mass  102/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS  103, supplier declarations, and /or analytical test data.  103 intentional ingredient in the semiconductor device and, alle reason to believe that the unavoidable impurity concen-  104 wide.  105 astics. You can access the UL iQTM family of databases to astics. You can access the UL iQTM fa	to the best of tration of the obtain a test of the packin corporated's gy Incorporate of the packin the packin corporated's gy Incorporate of the packin the packin corporated by ramblers and raponents. The control on the exclusion of the packin the pack	f Microchip To e chemical sub t report at g slip on the of semiconduct atted cannot g aw material su aw material su ese estimates usive, limited in e provided in	chnology stance, if souter box or devices uarantee uppliers. do not product	0.02	(mg) Total  Doped Silicon  (mg) Total  Doped 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	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.10

MN\_HC\_LC 10-TDFN 10:04 AM : 5/6/2014

Baic Substance
Basic Substance   CAS Number   Sub-Component   Weight   mg/part   mg/part   ppm   13.56 (mg) Total   Moid Compound   42.04   11.900   427.03   11.900   42
Epoxy Resin
Phenolic Resin A   Trade Secret   Mold Compound   2,938   0,814   29,376   Aluminum hydroxide   21645-51-2   Mold Compound   0,174   0,041   1,469   Carbon Black   1333-86-4   Mold Compound   0,147   0,041   1,469   Carbon Black   1333-86-4   0,30   Carbon Black   Ca
Aluminum hydroxide 2764-51-2 Mold Compound 0.734 0.203 7.344 Cathon Black 1333-86-4 Mold Compound 0.147 0.041 1.469 Cathon Black 1333-86-4 0.30 Cathon Black 1333-86-4 0.3
Carbon Black   1333-86-4   Mold Compound   0.147   0.041   1,469
Copper
Ton
Zinc
Silver   7440-22-4   Lead Frame   0.039   0.011   39 0
Phosphorus
Silver 7440-22-4 Die Attach 0.477 0.132 4.774 Epoxy resin Trade Secret Die Attach 0.124 0.034 1.240 Metal oxide Trade Secret Die Attach 0.019 0.005 186 Silicon 7440-21-3 Chip (Die) 9.110 2.523 91,100 0.17 (mg) Total Die Attach 0.019 0.006 Nickel 7440-67-5 Wire Bond 0.080 0.022 800 Nickel 7440-02-0 Plating on external leads (pins) 1.980 0.548 19,800 Epoxy resin Trade Secret 2.0.00 Palladium 7440-05-3 Plating on external leads (pins) 0.110 0.030 1.100 Gold 7440-57-5 Plating on external leads (pins) 0.110 0.030 1.100 TOTALS: 100.000 27.700 1,000,000 0.252 0.000 TOTALS: 100.000 27.700 1,000,000 0.000 0.252 0.000 Metal oxide Trade Secret 2.0.00 Metal oxide Trade Secret 2.0.00 Metal oxide Trade Secret 2.0.00 metal oxide proposed 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 tive 2002/53/EC (End-of-Life Vehicles (ELV) Directives.  Doped Silicon 7440-21-3 100.00 0.000
Epoxy resin   Trade Secret   Die Attach   0.124   0.034   1.240
Metal oxide Trade Secret Die Attach 0.019 0.005 186  Silicon 7440-21-3 Chip (Die) 9.110 2.523 91,100 0.17 (mg) Total 100.00  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 Palladium 7440-57-5 Plating on external leads (pins) 0.110 0.030 1,100  Gold 7440-57-5 Plating on external leads (pins) 0.110 0.030 1,100  Gold 7440-57-5 Plating on external leads (pins) 0.110 0.030 1,100  TOTALS: 100.000 27.700 1,000,000  TOTALS: 100.000 27.700 1,000,000  O.0277 g Total Mass  Doped Silicon 7440-21-3 100.00  Total 100.00  O.0277 g Total Mass  Doped Silicon 7440-21-3 100.00  Doped Silicon 7440-21-3 100.00  Total 100.00  O.02 (mg) Total Weight 100.00  Total 100.00  Total 100.00  Total 100.00  Doped Silicon 7440-21-3 100.00  Total 100.00  Total 100.00  Total 100.00  Total Weight 100.00  Total Weight 100.00  Total 100.00  Tota
Silicon 7440-21-3 Chip (Die) 9.110 2.523 91,100 0.17 (mg) Total Die Attach % of Total Weight Doped Gold 7440-57-5 Wire Bond 0.080 0.022 800 Nickel 7440-02-0 Plating on external leads (pins) 1.980 0.548 19,800 Epoxy resin 17ade Secret 20.00 Palladium 7440-05-3 Plating on external leads (pins) 0.110 0.030 1,100 Metal oxide Trade Secret 3.00 Total Weight Doped Gold 7440-57-5 Plating on external leads (pins) 0.1110 0.030 1,100 Epoxy resin 17ade Secret 3.00 Total Weight Doped Gold 7440-57-5 Plating on external leads (pins) 0.1110 0.030 1,100 Epoxy resin 17ade Secret 3.00 Epoxy resin 17ade Secret 3.00 Total Weight Doped Gold 7440-57-5 Plating on external leads (pins) 0.1110 0.030 1,100 Epoxy resin 17ade Secret 3.00 Epox resin 17ade Secret 3.00 Epox resin 17ade Secret 3.00 Epox resi
Doped Gold  7440-57-5  Wire Bond  0.080  0.022  800  Nickel  7440-02-0  Plating on external leads (pins)  Palladium  7440-05-3  Plating on external leads (pins)  O.0277 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) and with EU tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Dilance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Doped Silicon  Total  Total  Total  Total  Total  O.02 (mg) Total  Wire Bond  Silver  7440-22-4  77.00  Meta oxide  Fpoxyresin  Trade Secret  20.00  Meta oxide  Meta oxide  Total  Total  Total  100.00  Cimp) Total  Total  100.00  O.0277 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) and with EU  Total  100.00  Total  O.02 (mg) Total  Wire Bond  7440-21-3  100.00  Meta oxide  Total  Total  100.00  Total  Total  100.00  Total  Total  100.00  Total  Total  100.00  Plating on external leads (pins)  O.110  O.330  1,100  Total  Total  100.00  O.0277 g Total Mass  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 s not below the threshold of regulatory concern for any regulatory scheme world-wide.  Total  100.00  Plating on external leads (pins)  Total  Total  100.00  Plating on external leads (pins)  Doped Silicon  Total  Total  100.00  Plating on external leads (pins)  Plating on external leads (pins)  Doped Silicon  Total  Total  100.00  Plating on the outer box and provided the packing slip on the outer box and provided
Nickel 7440-02-0 Plating on external leads (pins) 1.980 0.548 19,800 Palladium 7440-05-3 Plating on external leads (pins) 0.110 0.030 1,100 Gold 7440-57-5 Plating on external leads (pins) 0.110 0.030 1,100  TOTALS: 100.000 27.700 1,000,000 TOTALS: 100.000 27.700 1,000,000 TOTALS: 100.000 27.700 1,000,000  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 tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Diance 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  Total Wire Bond % of Total Weight when 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 so not below the threshold of regulatory concern for any regulatory scheme world-wide.  Total 100.00  Total Wire Bond 7440-57-5 100.00  Total Weight Doped Gold 7440-57-5 100.00  Particle Weight Doped Gold 7440-57-5 100.00  Total Weight Doped Gold 7440-57-5 100.00  Particle Weight Doped Gold 7440-57-5 100.00  Total Weight Doped Gold 7440-57-5 100.00  Total Weight Doped Gold 7440-57-5 100.00  Particle Weight Doped Gold 7440-57-5 100.00  Total Weight Doped Gold 7440-57-5 100.00  Particle Weight Doped Gold 7440-57-5 100.00  Total Weight Doped Gold 7440-57-5 100.00  Particle Weight Do
Palladium 7440-05-3 Plating on external leads (pins) 0.110 0.030 1,100  Gold 7440-57-5 Plating on external leads (pins) 0.110 0.030 1,100  TOTALS: 100.000 27.700 1,000,000 2.52 (mg) Total Chip (Die) % of Total Weight Opped Silicon 7440-21-3 100.00  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 tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Plating on external leads (pins) 0.110 0.030 1,100  TOTALS: 100.000 27.700 1,000,000 2.52 (mg) Total Chip (Die) % of Total Weight 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) Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  0.02 (mg) Total Wire Bond % of Total Weight 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 scheme world-wide.  Total 100.00  Total Weight Doped Gold 7440-57-5 100.00  Doped Gold 7440-57-5 100.00  Total Weight Doped Gold 7440-57-5 100.00  Plating on external leads (pins) 0.110 0.00  Total Weight Doped Gold 7440-57-5 100.00  Plating on external leads (pins) 0.110 0.00  Plating on external leads (pins) 0.110 0.00  Total Weight Doped Gold 7440-57-5 100.00  Total Weight Doped Gold 7
TOTALS: 100.000 27.70 1,000,000 2.52 (mg) Total Chip (Die) % of Total Weight 0.0277 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) and with EU tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  pliance with the 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 so not below the threshold of regulatory concern for any regulatory scheme world-wide.  Total 100.00  Total Wire Bond % of Total Weight on 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 so not below the threshold of regulatory concern for any regulatory scheme world-wide.  Total 100.00  Total 100.00  Plating on external Plating on external Plating on the outer box and the packing slip on the outer box and the packing
O.0277 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) and with EU titue 2002/95/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.    0.02 (mg) Total   Wire Bond   % of Total Weight
O.0277 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) and with EU tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Diance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  O.02 (mg) Total Wire Bond % of Total Weight nemical 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 so not below the threshold of regulatory concern for any regulatory scheme world-wide.  Total 100.00  Total Violance Wire Bond % of Total Weight population of the chemical substance, if so not below the threshold of regulatory concern for any regulatory scheme world-wide.  Total 100.00  Total Violance Wire Bond % of Total Weight population of the chemical substance, if so not below the threshold of regulatory concern for any regulatory scheme world-wide.  Total 100.00  Total Wire Bond % of Total Weight population of the chemical substance, if so not below the threshold of regulatory concern for any regulatory scheme world-wide.  Total 100.00  Flating on external world-wire for product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and the program of the polytic plastic will be 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 packing slip on the outer box and the program of the polytic plastic will be specific product is shipped are made from polyvinyl chloride.
temiconductor 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).  Diance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Double (mg) Total Wire Bond % of Total Weight were 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 so not below the threshold of regulatory concern for any regulatory scheme world-wide.  Total 100.00  Total Wire Bond % of Total Weight Doped Gold 7440-57-5 100.00 100
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   100.00
Ing compounds used by wicrocinp meet the 0LS4 vollaminability standard for plastics. You can access the 0L for manning of databases to obtain a test report at ///ul.com/global/eng/pages/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.
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 idied only as estimates of the average weight of these parts and the average weight of those parts and the average weight of these parts and the average weight of the average weight of these parts and the average weight of the average weight of these parts and the average weight of the average and the average weight of the average weigh
ochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product 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 5.00
tations, sales order acknowledgement, and invoices.
ations, sales order acknowledgement, and invoices.    Control is claims 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 Gold 7440-57-5 5.00 s Certificate of Compliance for semiconductor products.

10 VDFN 3x3 10:04 AM : 5/6/2014

Semiconductor Device Tyl  Basic Substance  Silica, fused  Epoxy Resin (NLP # 500-033-5)  Phenolic Resin  Carbon Black  Copper	CAS Number 60676-86-0	"Contained In"								e4
Silica, fused Epoxy Resin (NLP #500-033-5) Phenolic Resin Carbon Black			1	1			•			64
Epoxy Resin (NLP # 500-033-5) Phenolic Resin Carbon Black	60676-86-0	Sub-Component	% Total Weight	mg/part	ppm	5.37	(mg) Total	Mold Compound	% ot Total Weight	67.95
Phenolic Resin Carbon Black		Mold Compound	61.155	4.831	611,550		Silica, fused	60676-86-0	90.00	
Carbon Black	Trade Secret	Mold Compound	3.296	0.260	32,956	Epoxy	Resin (NLP # 500-033-5)	Trade Secret	4.85	
	Trade Secret	Mold Compound	3.296	0.260	32,956		Phenolic Resin	Trade Secret	4.85	d
Copper	1333-86-4	Mold Compound	0.204	0.016	2,039	<u> </u>	Carbon Black	1333-86-4	0.30	<u>l</u>
	7440-50-8	Lead Frame	20.779	1.642	207,786			Total		
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	i
Zinc	7440-66-6	Lead Frame	0.038	0.003	384		Tin	7440-31-5	0.25	i
Chromium	7440-47-3	Lead Frame	0.053	0.004	533		Silver	7440-22-4	1.91	i
Silver	7440-22-4	Die Attach	1.911	0.151	19,110		Zinc	7440-66-6	0.18	i
Acrylate resins Proprietary	Trade Secret	Die Attach	0.441	0.035	4,410	<u> </u>	Chromium	7440-47-3	0.25	<u>.</u>
Treated silica	Trade Secret	Die Attach	0.049	0.004	490			Total		
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		Silver	7440-22-4	78	i
Gold	7440-57-5	Wire Bond	0.750	0.059	7,500		Acrylate resins Proprietary	Trade Secret	18	i
Nickel	7440-02-0	Plating on external leads (pins)	0.163	0.013	1,627	L	Treated silica	Trade Secret	2	i
Palladium	7440-05-03	Plating on external leads (pins)	0.005	0.000	55	Heter	ocyclic organic compound	Trade Secret	2	<u>.</u>
JGPSSI (D02) (Gold)	7440-57-5	Plating on external leads (pins)	0.002	0.000	18			Total		
		TOTA	LS: 100.000	7.900	1,000,000	0.58	Total (mg)	Chip (Die)	% of Total Weight	7.35
	0.0079 g To	tal Mass					Doped Silicon	7440-21-3	100	
properties (ELV) Directive).  ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic corporated's knowledge and belief as of the date of this docure low the threshold of regulatory concern for any regulatory.	cal substance is NOT an inte	ntional ingredient in the semiconductor device				0.06	(mg) Total  Doped Gold	Wire Bond 7440-57-5	% of Total Weight	0.75
olding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pla	nability standard for plastics	You can access the UL iQTM family of databas	es to obtain a test repo	rt at		<u> </u>		Total	100.00	J
he protective "tubes" in which the specific product is shipped a reels" may be made from PVC plastic.	are made from polyvinyl chl	oride (PVC) plastic. "Window envelopes" used t	o hold the packing slip	on the outer b	oox and certain	0.01	(mg) Total	Plating on external leads (pins)	% of Total Weight	0.17
icrochip Technology Incorporated believes the information in t riginal packing materials is true and correct to the best of its kn d accuracy of data in this form because it has been compiled I rotected from disclosure as trade secrets and some information if the average weight of these parts and the average weight of a laterials contained within silicon devices (silicon IC) in the finis	nowledge and belief, as of th based on the ranges provide n may not have been provid nticipated significant toxic r	e date listed in this form. Microchip Technology od in Material Safety Data Sheets provided by ra ed by subcontract assemblers and raw material	Incorporated cannot g w material suppliers. So suppliers. Information	uarantee the c upplier informatis is provided on	completeness ation is often nly as estimates		Nickel	7440-02-0	95.73	
icrochip Technology Incorporated does not provide any warran rovided by Microchip Technology Incorporated and its subsidia rder acknowledgement, and invoices.							Palladium	7440-05-3	3.23	
	ges to Material Content Decl									d

MUY 08 UDFN 10:05 AM : 5/6/2014

AICROCHIP  Semiconductor Device Ty	pe: 64 LQFP 10x10x1.4ı	mm V6		nation Base opper Alloy (			-	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	24211	"Contained In" Sub-Component	% Total			119.94	(mg) Total	Mold Compound	% ot Total Weight	71.95
Basic Substance	CAS Number		Weight	mg/part	ppm		F 1077		04.00	
Fused Silica Epoxy Resin 1 & 2	60676-86-0 Trade Secret	Mold Compound  Mold Compound	60.870 4.245	101.470 7.076	608,697 42,451	l	Fused Silica Epoxy Resin 1 & 2	60676-86-0 Trade Secret	84.60 5.90	
Metal Hydroxide	Trade Secret	Mold Compound	4.101	6.837	41.012	ł	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	i	Carbon Black	1333-86-4	0.20	
Copper	7440-50-8	Lead Frame	20.724	34.548	207,244	1	Garbon Black	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	30.27	Copper	7440-50-8	95.24	21.70
Magnesium	7439-95-4	Lead Frame	0.038	0.036	218	1	Nickel	7440-30-6	2.54	
Silver	7440-22-4	Lead Frame	0.363	0.605	3.632	1	Silicon	7440-02-0	0.45	
Silver	7440-22-4	Die Attach	0.146	0.244	1,463	1	Magnesium	7439-95-4	0.43	
Acrylic Resin	Trade secret	Die Attach	0.016	0.027	162	1	Silver	7440-22-4	1.67	
Polybutadiene derivative & Coplolymer	9003-17-2	Die Attach	0.012	0.021	124	1		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		Silver	7440-22-4	77.00	
Silicon	7440-21-3	Chip (Die)	2.550	4.251	25,500	1	Acrylic Resin	Trade secret	8.50	
Gold	7440-57-5	Wire Bond	0.490	0.817	4,900	Polybutadier	ne derivative & Coplolymer	9003-17-2	6.50	
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 ho		5.101	30,600	, oryputation	Acrylated EP-Resin	Trade secret	5.50	
101	7 TTO GT G T TAKING	TOTAL		166.700		ı				
					1.000.000			Trade secret	2.50	
	0.1667 g To y with EU Directive 2002/95	otal Mass			1,000,000 nd with EU	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 compl ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). opliance with the above EU Directives has been verified via in themical substance is absent from the list above, the chemic	y with EU Directive 2002/95 ternal design controls, sup	otal Mass /EC (RoHS Directive), EU Directive 2011/65/E	U (RoHS Recas	st Directive) a	nd with EU	4.25		Total	100.00	2.55
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via in the chemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date on ical substance, if any, is not below the threshold of regulated thing compounds used by Microchip meet the UL94 V0 flamma	y with EU Directive 2002/95 ternal design controls, supp all substance is NOT an inte f this document, there is no rry concern for any regulate ability standard for plastics.	otal Mass  /EC (RoHS Directive), EU Directive 2011/65/E  plier declarations, and /or analytical test data  intional ingredient in the semiconductor dev  occedible reason to believe that the unavoid-  ory scheme world-wide.	U (RoHS Recas  . ce and, to the belief the belief the control of the belief the belief the control of the belief the belief the control of the belief the control of the belief the belief the control of the belief the belief the control of the belief the belief the belief the control of the belief the belief the belief the belief the control of the belief	et Directive) and the contraction of the contractio	nd with EU hip of the	4.25	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	2.55
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via in  Chemical substance is absent from the list above, the chemic  Innology Incorporated's knowledge and belief as of the date o  mical substance, if any, is not below the threshold of regulate  Ing compounds used by Microchip meet the UL94 V0 flamma:  I/lul.com/global/eng/pages/offerings/industries/chemicals/pla  protective "tubes" in which the specific product is shipped a	y with EU Directive 2002/95 ternal design controls, suppleter and substance is NOT an intended in the suppleter is not become the suppleter is not supplete in the suppleter is not supplete in the supplete in the supplete in the supplete is not supplete in the supplete i	otal Mass  /EC (RoHS Directive), EU Directive 2011/65/E  plier declarations, and /or analytical test data intional ingredient in the semiconductor dev be credible reason to believe that the unavoid- bry scheme world-wide.  You can access the UL iQTM family of datal	U (RoHS Recas . ce and, to the because impurity co	best of Microconcentration of a test report	nd with EU  thip of the	0.82	(mg) Total  Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via in the chemical substance is absent from the list above, the chemic hnology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulated ting compounds used by Microchip meet the UL94 V0 flamma://ul.com/global/eng/pages/offerings/industries/chemicals/pla	y with EU Directive 2002/95 ternal design controls, suppleter and substance is NOT an intended in the suppleter is not become the suppleter is not supplete in the suppleter is not supplete in the supplete in the supplete in the supplete is not supplete in the supplete i	otal Mass  /EC (RoHS Directive), EU Directive 2011/65/E  plier declarations, and /or analytical test data intional ingredient in the semiconductor dev be credible reason to believe that the unavoid- bry scheme world-wide.  You can access the UL iQTM family of datal	U (RoHS Recas . ce and, to the belie impurity co	best of Microconcentration of a test report	nd with EU  thip of the		(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).  Inpliance with the above EU Directives has been verified via in  themical substance is absent from the list above, the chemic  Innology Incorporated's knowledge and belief as of the date o  mical substance, if any, is not below the threshold of regulate  If ing compounds used by Microchip meet the UL94 V0 flamma:  If Ind.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.  The incomposition of the information in the  ces in their original packing materials is true and correct to the  trantee the completeness and accuracy of data in this form  and  material suppliers. Supplier information is often protected from de  material suppliers. Information is provided only as estimates	y with EU Directive 2002/95 ternal design controls, suppal substance is NOT an inte f this document, there is no roy concern for any regulate ability standard for plastics. stics/ re made from polyvinyl chle his form concerning substante best of its knowledge an cause it has been compilet sicolosure as trade secrets a of the average weight of the	otal Mass  /EC (RoHS Directive), EU Directive 2011/65/E  plier declarations, and /or analytical test data intional ingredient in the semiconductor dev credible reason to believe that the unavoid- ory scheme world-wide.  You can access the UL iQTM family of datal  oride (PVC) plastic. "Window envelopes" use nces restricted by RoHS in Microchip Techn d belief, as of the date listed in this form. Mid based on the ranges provided in Material S and some information may not have been pre ses parts and the average weight of anticipa	U (RoHS Recas  . ce and, to the beble impurity co ases to obtain d to hold the pology Incorpora rochip Techno fety Data Shee vided by subco ed significant t	pest of Microconcentration of a test report acking slip or acking slip or acking serviced by the contract assembly acking the contract acking the	thip of the at the outer add cannot by raw	0.82	(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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via in  Chemical substance is absent from the list above, the chemic  Innology Incorporated's knowledge and belief as of the date o  mical substance, if any, is not below the threshold of regulate  Ing compounds used by Microchip meet the UL94 V0 flamma:  I/lul.com/global/eng/pages/offerings/industries/chemicals/pla  protective "tubes" in which the specific product is shipped a	y with EU Directive 2002/95 ternal design controls, supplant and substance is NOT an intermediate of this document, there is not by concern for any regulate ability standard for plastics. Stics/ re made from polyvinyl chlowing from concerning substante best of its knowledge an cause it has been compilet isclosure as trade secrets a for the average weight of the not non-metal materials contry, express or implied, with ted and its subsidiaries are	otal Mass  /EC (RoHS Directive), EU Directive 2011/65/E  plier declarations, and /or analytical test data intional ingredient in the semiconductor dev ocredible reason to believe that the unavoid- ory scheme world-wide.  You can access the UL iQTM family of datal pride (PVC) plastic. "Window envelopes" use nices restricted by RoHS in Microchip Technic d belief, as of the date listed in this form. Mic based on the ranges provided in Material S and some information may not have been pre sep parts and the average weight of anticipa tained within silicon devices (silicon IC) in the respect to the information provided in this of	U (RoHS Recas  .  .  .  .  .  .  .  .  .  .  .  .  .	pest of Microconcentration of a test report acking slip or leted's semicology Incorpor lets provided bontract assem coxic metals of s.	thip of the at at the outer ated cannot by raw ablers and omponents.	0.82	(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).  Inpliance with the above EU Directives has been verified via in  Chemical substance is absent from the list above, the chemic  Inhology Incorporated's knowledge and belief as of the date o  mical substance, if any, is not below the threshold of regulate  Iding compounds used by Microchip meet the UL94 V0 flamma:  If/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.  Incochip Technology Incorporated believes the information in the  interior original packing materials is true and correct to the  trantee the completeness and accuracy of data in this form be  arrantee the completeness and accuracy of data in this form be  distanced in the provided suppliers. Supplier information is often protected from de  material suppliers. Information is provided only as estimates  se estimates do not include trace levels of dopants, metals, a  prochip Technology Incorporated does not provide any warrand  and dust warranties provided by Microchip Technology Incorporated  flow in the control of the	y with EU Directive 2002/95 ternal design controls, suppal substance is NOT an interest fit is document, there is no roy concern for any regulate shillity standard for plastics. Stics/ re made from polyvinyl chles is form concerning substance best of its knowledge an cause it has been compilect is closure as trade secrets a of the average weight of the non-metal materials conty, express or implied, with ted and its subsidiaries are roices.  es to Material Content Declars' reliance on the informa	potal Mass  /EC (RoHS Directive), EU Directive 2011/65/E  plier declarations, and /or analytical test data intional ingredient in the semiconductor dev credible reason to believe that the unavoid- by scheme world-wide.  You can access the UL iQTM family of datal oride (PVC) plastic. "Window envelopes" use the semiconductor of the semiconductor	U (RoHS Recas  . ce and, to the becases to obtain d to hold the particular to the pa	pest of Microconcentration of a test report acking slip or acking slip or acking semicology incorpor ets provided bontract assemboxic metals of s.  exclusive, lin sale. These a andirect, conse	and with EU  Thip of the  at  The outer  Inductor  ated cannot  yo raw  ablers and  omponents.	0.82 Doped Gold	(mg) Total  Doped Silicon  (mg) Total  Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.49

64 LQFP 10x10 V6 10:05 AM : 5/6/2014

Semiconductor Devic	e Type: 100 LQFP 14x14x1	.4mm (H7)		nation Base A pper Alloy (C	,		Package Homoç	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
	1 1	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	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 or	n 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 Tot	al Mass						Total	100.00	
	comply with EU Directive 2002/95/E		(RoHS Recast	Directive) and	with EU	7.97	Total (mg)	Chip (Die)	% of Total Weight	1.64
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) pliance with the above EU Directives has been verified	comply with EU Directive 2002/95/E	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data.		·	-	7.97	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	1.64
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 coology Incorporated's knowledge and belief as of the lance, if any, is not below the threshold of regulatory ing compounds used by Microchip meet the UL94 VO	comply with EU Directive 2002/95/f.  I via internal design controls, supp hemical substance is NOT an inten date of this document, there is no concern for any regulatory scheme flammability standard for plastics.	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. tional ingredient in the semiconductor device credible reason to believe that the unavoidal world-wide.	e and, to the be	st of Microchip centration of t	- -	7.97		7440-21-3	100	1.64 0.43
semiconductor device and its homogenous materials titve 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 conology Incorporated's knowledge and belief as of the tance, if any, is not below the threshold of regulatory 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.	comply with EU Directive 2002/95/f.  I via internal design controls, supp hemical substance is NOT an inten date of this document, there is no concern for any regulatory scheme flammability standard for plastics. als/plastics/	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. tional ingredient in the semiconductor devic credible reason to believe that the unavoidal world-wide. You can access the UL iQTM family of datab	e and, to the be le impurity con- ases to obtain a	st of Microchip centration of the	o he chemical		Doped Silicon	7440-21-3 Total	100	
etive 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 conology incorporated's knowledge and belief as of the tance, if any, is not below the threshold of regulatory ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemicorotective "tubes" in which the specific product is shi	comply with EU Directive 2002/95/ft I via internal design controls, supp hemical substance is NOT an inten date of this document, there is no concern for any regulatory scheme flammability standard for plastics. als/plastics/ oped are made from polyvinyl chlo on in this form concerning substan ct to the best of its knowledge and orm because it has been compiled I closure as trade secrets and some average weight of these parts and	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. tional ingredient in the semiconductor device dible reason to believe that the unavoidal world-wide. You can access the UL iQTM family of databride (PVC) plastic. "Window envelopes" use ces restricted by RoHS in Microchip Technobelief, as of the date listed in this form. Microased on the ranges provided in Material Sainformation may not have been provided by the average weight of anticipated significan	e and, to the be le impurity con- ases to obtain a I to hold the pac- ogy Incorporate ochip Technolo ety Data Sheets subcontract ass toxic metals co	st of Microchip centration of ti test report at cking slip on the d's semicond gy Incorporate provided by re- temblers and re-	o he chemical he outer box uctor ed cannot aw material aw material		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) pliance with the above EU Directives has been verified hemical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the tance, if any, is not below the threshold of regulatory ing compounds used by Microchip meet the UL.94 V0 (/ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shipper treels" may be made from PVC plastic.  Sochip Technology Incorporated believes the informatives in their original packing materials is true and correlated the completeness and accuracy of data in this feliers. Supplier information is often protected from dis lilers. Information is provided only as estimates of the	comply with EU Directive 2002/95/fd.  I via internal design controls, supp hemical substance is NOT an inten date of this document, there is no concern for any regulatory scheme flammability standard for plastics. als/plastics/ pped are made from polyvinyl chloron in this form concerning substanct to the best of its knowledge and form because it has been compiled is closure as trade secrets and some average weight of these parts and non-metal materials contained warranty, express or implied, with red and its subsidiaries are contained.	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. tional ingredient in the semiconductor device dible reason to believe that the unavoidal world-wide.  You can access the UL iQTM family of databouride (PVC) plastic. "Window envelopes" use ces restricted by RoHS in Microchip Technobelief, as of the date listed in this form. Microased on the ranges provided in Material Sainformation may not have been provided by the average weight of anticipated significan vithin silicon devices (silicon IC) in the finist espect to the information provided in this despect to the information provided in the information provide	e and, to the be le impurity con- ases to obtain a I to hold the pac- ogy Incorporate ochip Technolo ety Data Sheets subcontract ass toxic metals co- ed parts.	st of Microchip centration of the test report at cking slip on the d's semicond gy Incorporate provided by remblers and remponents. The xclusive, limit	he chemical he outer box uctor d cannot aw material raw material ese		Doped Silicon  (mg) Total  Doped Gold  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
pliance with the above EU Directives (ELV) Directive) pliance with the above EU Directives has been verified hemical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the tance, if any, is not below the threshold of regulatory ing compounds used by Microchip meet the UL94 V0 //ul.com/global/eng/pages/offerings/industries/chemicorotective "tubes" in which the specific product is shipper the compound of the product is shipper than the compound of the product is shipper than the compound of the product is shipper than the completeness and accuracy of data in this fallers. Supplier information is often protected from distilers. Information is provided only as estimates of the lates do not include trace levels of dopants, metals, a poschip Technology Incorporated does not provide any antities provided by Microchip Technology Incorporated only provided only Incorporated in the provided only Incorporated only Incorporated in the provided only Incorporated provided only Incorporated only Incorporated only Incorporated provided provided only Incorporated provided pr	comply with EU Directive 2002/95/ft.  I via internal design controls, supp hemical substance is NOT an intendate of this document, there is no concern for any regulatory scheme flammability standard for plastics. als/plastics/ oped are made from polyvinyl chloron in this form concerning substanct to the best of its knowledge and orm because it has been compiled I closure as trade secrets and some average weight of these parts and non-metal materials contained warranty, express or implied, with rd and its subsidiaries are contained in invices.  changes to Material Content Decla he users' reliance on the informative.	EC (RoHS Directive), EU Directive 2011/65/EU lier declarations, and /or analytical test data. tional ingredient in the semiconductor device considered in the semiconductor device that the unavoidal world-wide. You can access the UL iQTM family of databoride (PVC) plastic. "Window envelopes" use ces restricted by RoHS in Microchip Techno belief, as of the date listed in this form. Microsed on the ranges provided in Material Satinformation may not have been provided by the average weight of anticipated significan vithin silicon devices (silicon IC) in the finish espect to the information provided in this di in Microchip's standard terms and condition rations and shall not be liable for any damage.	e and, to the be le impurity con- asses to obtain a I to hold the pac- oogy Incorporate ochip Technolo ety Data Sheets subcontract ass toxic metals co- ed parts. claration. The e ns of sale. Thes	st of Microchip centration of the test report at cking slip on the cking slip on the d's semicond gy Incorporate provided by ramponents. The mponents. The xclusive, limite e are provided irect, conseque	ne outer box uctor ed cannot aw material aw material ese ed product l in	2.09	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	0.43

TQE3 10:05 AM : 5/6/2014

MICROCHIP  Semiconductor Device Typ	e: 100 LQFP1	14x14x1.4mm H7		nation Base opper Alloy (	,		•	ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	491.77	(mg) Total	Mold Compound	% ot Total Weight	84.73
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	100.00	•
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	100.00	
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	Polvb	outadiene derivative & Copl	9003-17-2	7	
			100 000	F00 400	4 000 000	.,.			100.00	ı
		IOTALS:	100.000	580.400	1.000.000			Total	100.00	
	ials comply with El		100.000 ive 2011/65/E	580.400 EU (RoHS Rec	1,000,000 _	3.31	(mg) Total  Doped Silicon	Total Chip (Die) 7440-21-3	% of Total Weight	0.57
ective) and with EU Directive 2002/53/EC (End-of-Li	rials comply with El re Vehicles (ELV) Di	g Total Mass U Directive 2002/95/EC (RoHS Directive), EU Directirective).	ive 2011/65/E	EU (RoHS Rec	,,	3.31		Chip (Die)	% of Total Weight	0.57
rective) and with EU Directive 2002/53/EC (End-of-Li impliance with the above EU Directives has been ve a chemical substance is absent from the list above, crochip Technology Incorporated's knowledge and incentration of the chemical substance, if any, is no	ials comply with Elfe Vehicles (ELV) Di rified via internal de the chemical substa belief as of the date below the threshol	g Total Mass U Directive 2002/95/EC (RoHS Directive), EU Directirective).  esign controls, supplier declarations, and /or analytance is NOT an intentional ingredient in the semice of this document, there is no credible reason to bild of regulatory concern for any regulatory scheme	rtical test date onductor develieve that the world-wide.	EU (RoHS Rec a. rice and, to the unavoidable	e best of le impurity	0.58		Chip (Die) 7440-21-3	% of Total Weight	0.57
rective) and with EU Directive 2002/53/EC (End-of-Li empliance with the above EU Directives has been ve a chemical substance is absent from the list above, crochip Technology Incorporated's knowledge and incentration of the chemical substance, if any, is no adding compounds used by Microchip meet the UL9. bort at http://ul.com/global/eng/pages/offerings/indu	ials comply with Elie Vehicles (ELV) Di ified via internal de the chemical substa- pelief as of the date below the threshol VO flammability st stries/chemicals/pl	g Total Mass U Directive 2002/95/EC (RoHS Directive), EU Directirective). esign controls, supplier declarations, and /or analytical series NOT an intentional ingredient in the semice of this document, there is no credible reason to be do fregulatory concern for any regulatory scheme andard for plastics. You can access the UL iQTM fastics/	rtical test date onductor develeve that the world-wide amily of data	EU (RoHS Rec a. ice and, to the unavoidable bases to obta	e best of le impurity ain a test		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
is semiconductor device and its homogenous mate rective) and with EU Directive 2002/53/EC (End-of-Li ompliance with the above EU Directives has been vera chemical substance is absent from the list above, crochip Technology Incorporated's knowledge and ncentration of the chemical substance, if any, is no olding compounds used by Microchip meet the UL9-port at http://ul.com/global/eng/pages/offerings/indue protective "tubes" in which the specific product is pon the outer box and certain "reels" may be made	ials comply with Elie Vehicles (ELV) Driffied via internal de the chemical substate belief as of the date below the threshol V0 flammability staties/chemicals/plasshipped are made	g Total Mass U Directive 2002/95/EC (RoHS Directive), EU Directirective). esign controls, supplier declarations, and /or analytical series NOT an intentional ingredient in the semice of this document, there is no credible reason to be do fregulatory concern for any regulatory scheme andard for plastics. You can access the UL iQTM fastics/	rtical test date onductor develeve that the world-wide amily of data	EU (RoHS Rec a. ice and, to the unavoidable bases to obta	e best of le impurity ain a test		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	
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rective) and with EU Directive 2002/53/EC (End-of-Li compliance with the above EU Directives has been ve a chemical substance is absent from the list above, crochip Technology Incorporated's knowledge and ncentration of the chemical substance, if any, is no colding compounds used by Microchip meet the UL9- cort at http://ul.com/global/eng/pages/offerings/indu e protective "tubes" in which the specific product i p on the outer box and certain "reels" may be made crochip Technology Incorporated believes the infor miconductor devices in their original packing mate chnology Incorporated cannot guarantee the compl aterial Safety Data Sheets provided by raw material is any not have been provided by subcontract assemble tres and the average weight of anticipated significan atterials contained within silicon devices (silicon IC) crochip Technology Incorporated does not provide clusive, limited product warranties provided by Mic	rials comply with Elie Vehicles (ELV) Dirified via internal de the chemical substabelief as of the date below the threshol. Wo flammability staties/chemicals/plastries/chemicals/plastries/chemicals/plastries/chemicals/plastries/chemicals/plastries/chemicals/plastries/chemicals/plastries. The staties and accuration in this form protection and correction and correct	under the second	rtical test date onductor develelieve that the world-wide amily of data on the company of the co	a.  ice and, to the unavoidable observed to hold the cology Incorped in the ranges prand some inferage weight en, metals, and declaration. T standard term ages, direct o	e best of le impurity lain a test le packing lorated's lorated's lorated's loratedin formation of these non-metal lihe lins and r indirect,	0.58	Doped Silicon  (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 150°C for	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.1

100 LQFP 14x14 CuPd 10:06 AM : 5/6/2014

Basic Substance CAS Number Sub-Component Weight mg/part ppm  Siloux vireous (of huses) 6057-89-0 Mod Compound 57,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 57,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 57,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 57,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 57,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 58,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 58,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 58,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 58,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 58,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-865 577-855 Siloux vireous (of huses) 6057-89-0 Mod Compound 59,998 373-855 Siloux vireous (of huses) 6057-89-0 Mod Siloux vi	AICROCHIP	Smar DII 444 a	LOFD.		nation Base A				nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance CAS Number Sub-Component Weight mg/part ppm (25.6) (1976) (1981) (1987) (1981) (1987) (1981) (1987) (1981) (1987) (1981) (1987) (1981	Semiconductor Device	ype: PH 144 (Lead		N/ <del>T</del> - / - 1							63
Epocy Reins	Basic Substance	CAS Number			mg/part	ppm	439.61	(mg) Total	Mold Compound	% ot Total Weight	68.23
Priemotic Resear	Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.996	373.665	579,955		Silica, vitreous (or fused)	60676-86-0	85.00	
Carbon Black											
Copper											
Silver   7440-21-4   Leasf Frame   0.059   0.446   692   74.28   Coppe   7440-95-9   Coppe   C				0.1.00		-,		Carbon Black			
Silver 7440-224 Lead Frame 0.527 3.386 5.271											
The common of the production of the product is about from the list above. the chemical substance is about from Properties from the list above the chemical substance is about from Properties from the list above, the chemical substance is about from Properties from the list above, the chemical substance is NOT an interioral improduction of the chemical substance is about from Proprieted Fragilatory concern from Proprieted Fragilatory concern from Proprieted Fragilatory concerns from Proprieted Fragilatory concerns from Proprieted Fragilatory concerns from Proprieted Service and a contained which less parts and the severage weight of these parts and the severage weight of the							178.28				27.67
Chromium   7440-97-3   Lead Frame   0.068   0.446   5922											
Silver 7440-224 De Atlach 0.357 2.300 3.570 Alphatic and anlyhigh 7FU-LET 1760-5 Secret De Atlach 0.102 0.557 1.200 Alphatic and anlyhigh 7FU-LET 1760-5 Secret De Atlach 0.051 0.329 510  Silcon 7440-27-1 1760-5 Secret De Atlach 0.051 0.329 510  Trin 7440-31-5 large of Atlantic 1760-5 Secret De Atlach 0.051 0.329 510  Trin 7440-31-5 large of Atlantic 1760-5 Secret De Atlach 0.051 0.329 510  Trin 7440-31-5 large of Atlantic 1760-5 Secret De Atlantic 1760-5 S											
Epoty resin Trade Secret Die Attach 0.102 0.857 1,020 1 1,020											
Allphatic acid arrhydrider/ PRU-ALET   Trade Secret   Die Attach   0.051   0.329   510   5											
Silicon   7440-21-3   Chip (Die)   2.090   13.466   20.900   1.804   2.800   Solidor   1.804   2.800   Epony resid   Triad   7440-31-5   Energy on exemulated grows - Mains Tire / secondary - Mains								Gillottilatti			<u>J</u>
Gold 7440-57-5   Wire Bornd 1-202 78-80   12-20   7-203   7-203   7-20							2 20	(mg) Total			0.54
Tin 7440-31-5   Putrop onessement lastic piner) - Maters Tin / americal at 150°C for 1 hour 1 1220   7.860   12200    O.6.44.3g   Total Mass   O.6.44.3g   O.6.							3.23				0.51
O.6443 g Total Mass  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  13.47 Total (mg) Chip (Die  7440-21-3 10.00  Total Weight 2.09  Plainace with the above EU Directives however the whickes (ELV) Directive 2011/85/EU (RoHS Recast Directive) and with EU  13.47 Total (mg) Chip (Die  7440-21-3 10.00  Doped Silicon 7440-21-3 10.00  Total 100.00  To											
O.6443 g Total Mass  O.6443 g Total Mass  Total (mg)  Chip (Die)  No Total (weight 2.09  No Total Weight 2.09  No Total Weight 2.09  No Total Weight 2.09  Total of Deped Silcon 7440-21-3 100  Total (mg) Total 100.00  Total (mg) Total 100.00  Total (mg) Total 100.00  Total (mg) Total 100.00  Tota		11.00.0					Alinhatic				
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 two 2002/85/EC (RoHS Directive). Purchive 2002/85/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU two 2002/85/EC (RoHS Directive). Purchive 2011/85/EU (RoHS Recast Directive) and with EU two 2002/85/EC (RoHS Directive). Purchive 2011/85/EU (RoHS Recast Directive) and with EU two 2002/85/EC (RoHS Directive). Purchive 2011/85/EU (RoHS Recast Directive) and with EU two 2002/85/EC (RoHS Directive). Purchive 2011/85/EU (RoHS Recast Directive) and with EU two 2002/85/EC (RoHS Directive). Purchive 2011/85/EU (RoHS Recast Directive) and with EU two 2002/85/EC (RoHS Directive). Purchive 2011/85/EU (RoHS Recast Directive) and with EU two 2012/85/EC (RoHS Directive). Purchive 2011/85/EU (RoHS Directive) and with EU two 2012/85/EC (RoHS Directive). Purchive 2011/85/EU (RoHS Directive) and with EU two 2012/85/EC (RoHS Directive). Purchive 2011/85/EU (RoHS Directive) and with EU two 2012/85/EC (RoHS Directive). Purchive 2011/85/EU (RoHS Directive) and with EU two 2012/85/EC (RoHS Directive). Purchive 2012/85/EC		0.6443.4				.,,	/ inpriduo	dola di injundo / 11 o / ice 1			U
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.com/global/eng/pages/offerings/industries/chemicals/plastics/ vortective "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.    Doped Gold   T440-57-5   100	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	. ,	, , ,	dS Recast Direc	ctive) and with	EU	13.47		,		2.09
in "reels" may be made from PVC plastic.    Doped Gold   T440-57-5   100	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Dilance with the above EU Directives has been verified vinemical substance is absent from the list above, the cher	a internal design controls	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and	l, to the best of	Microchip Tee	chnology	13.47		7440-21-3	100	2.09
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 Material Safety Data Sheets provided by rechnology 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 remaining its form because it has been compiled based on the ranges provided by subcontract assemblers and 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 ided 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 openats, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Dechip 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 by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's Matter Tin/annealed at 150°C for 1 hour  7.86 (mg) Total Weight 1.22 ations, sales order acknowledgement, and invoices.  Dechip 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 rowless, 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.	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	a internal design controls nical substance is NOT a ument, there is no credib regulatory scheme world- nmability standard for pla	s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce-wide.	l, to the best of ntration of the	Microchip Tec	chnology		Doped Silicon	7440-21-3 Total	100	
titions, sales order acknowledgement, and invoices.  Chip disclaims any duty to notify users of updates or changes to Material Content Declaration in Material Content Declarations (MCD) or independent third party test reports (SGS) or S Certificate of Compliance for semiconductor products.  Tin (mg) Total leads (pins) - Matter Tin / annealed at 150°C for 1 / hour 1.22 / w of Total Weight 1.23 / w of Total Weight 1.24 / w of Total Weight 1.25	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 chei  porated's knowledge and belief as of the date of this doc  s not below the threshold of regulatory concern for any  ing 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 shippe	a internal design controls nical substance is NOT a ument, there is no credib egulatory scheme world- nmability standard for pla plastics/	s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases to the control of the cont	I, to the best of ntration of the	Microchip Tec 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	
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 is Certificate of Compliance for semiconductor products.	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  upliance with the above EU Directives has been verified victories with the above EU Directives has been verified victories as upstance is absent from the list above, the cheir prorated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any string compounds used by Microchip meet the UL94 V0 flar cl/ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipped ain "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 hamation is often protected from disclosure as trade secretided only as estimates of the average weight of these par	a internal design controls mical substance is NOT a ument, there is no credib regulatory scheme world- nmability standard for pla plastics/ d are made from polyvin  n this form concerning s of its knowledge and beli s been compiled based o s and some information i ts and the average weigh	s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases to the control of the cont	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	Microchip Techemical substraints of the control of	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  Total	100 100.00 % of Total Weight	
Total 100.00	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Appliance with the above EU Directives has been verified victories with the above EU Directives has been verified victories with the above EU Directives has been verified victories with the above EU Directives has been verified victories with the cheir porated's knowledge and belief as of the date of this doc is not below the threshold of regulatory concern for any iding compounds used by Microchip meet the UL94 V0 flar (Jul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipped ain "reels" may be made from PVC plastic.  Ochip Technology Incorporated believes the information is 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 secretided only as estimates of the average weight of these paropants, metals, and non-metal materials contained within ochip Technology Incorporated does not provide any war	a internal design controls nical substance is NOT a ument, there is no credib egulatory scheme world-mability standard for plaplastics/ d are made from polyvin n this form concerning s of its knowledge and bell s been compiled based o s and some information its and the average weigh silicon devices (silicon IC ranty, express or implied	s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and ple reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases to the control of the cont	I, to the best of ntration of the to obtain a test old the packing ncorporated's gy Incorporated by raw mand raw materiese estimates outlook.	Microchip Techemical substance of the conductor of cannot guaraterial supplied als suppliers. It do not include sive, limited p	chnology stance, if uter box and r devices in antee the ers. Supplier formation is trace levels	1.80	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	0.28
	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ppliance with the above EU Directives has been verified vist  themical 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  ling compounds used by Microchip meet the UL94 V0 flar  ling compounds used by Microchip meet the UL94 V0 flar  ling compounds used by Microchip meet the UL94 V0 flar  ling compounds used by Microchip shoutsries/chemicals.  protective "tubes" in which the specific product is shippe  sin "reels" may be made from PVC plastic.   ochip Technology Incorporated believes the information is  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  popants, metals, and non-metal materials contained with  anties provided by Microchip Technology Incorporated as  anties provided by Microchip Technology Incorporated as  ations, sales order acknowledgement, and invoices.  ochip disclaims any duty to notify users of updates or che	a internal design controls mical substance is NOT a ument, there is no credib egulatory scheme world- mability standard for pla plastics/ d are made from polyvin n this form concerning s of its knowledge and beli s been compiled based o s and some information i ts and the average weigh silicon devices (silicon IC ranty, express or implied nd its subsidiaries are con	s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases to a compare the control of the control o	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 materiese estimates of tion. The exclusale. These are irrect or indirect	Microchip Techemical substreport at g slip on the or semiconductod cannot guaraterial supplicial suppliers. It io not include sive, limited per provided in Marcochemical consequentials, consequentials, consequentials, consequentials	chnology stance, if uter box and r devices in antee the ers. Supplier offormation is trace levels roduct flicrochip's	1.80	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 hour	100  100.00  % of Total Weight  100  100.00	0.28

PH 144 LQFP 10:06 AM : 5/6/2014

MICROCHIP  Semiconductor Devi	rice Type: PQ 44 (Lead) N	/QFP (10x10x2mm) (T8)		nation Base A	•		-	mogeneous Materials: (e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			314.89	(mg) Total	Mold Compound	% ot Total Weight	64.87
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm			•	•	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	55.140	267.653	551,395		Silica, vitreous (or fused)	60676-86-0	85.00	
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	
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	
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		Silver (Ag)	7440-22-4	83	
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	
	0.4854	g Total Mass					•	Total	100.00	
is semiconductor device and its homogenous material ective 2002/53/EC (End-of-Life Vehicles (ELV) Directiv mpliance with the above EU Directives has been verifi	/e).	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol	IS Recast Dire	ctive) and with	EU	19.27	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	3.97
•	· ·	· · · ·						Total	100.00	
chemical substance is absent from the list above, the orporated's knowledge and belief as of the date of this	is document, there is no credi	an intentional ingredient in the semiconductor device and			cnnoloav					
r, is not below the threshold of regulatory concern for Iding compounds used by Microchip meet the UL94 V	0 flammability standard for pl		entration of the	chemical sub		1.02	(mg) Total	Wire Bond	% of Total Weight	0.21
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	0 flammability standard for pl nicals/plastics/	l-wide.	entration of the	chemical sub	stance, if	1.02	(mg) Total  Doped Gold	Wire Bond 7440-57-5	% of Total Weight	0.21
y, is not below the threshold of regulatory concern for olding compounds used by Microchip meet the UL94 Vip://ul.com/global/eng/pages/offerings/industries/chem e protective "tubes" in which the specific product is si 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 ormation is often protected from disclosure as trade s	10 flammability standard for place of p	d-wide.  astics. You can access the UL iQTM family of databases the UL iQTM family of databases the UL iQTM family of databases the unit of the inverse of the unit of the uni	ntration of the o obtain a test old the packing ncorporated's gy Incorporate vided by raw rand raw materi	chemical sub report at g slip on the or semiconducto d cannot guar naterial suppli al suppliers. Ii	stance, if  uter box and  r devices in antee the ers. Supplier	1.02	·			0.21
y, is not below the threshold of regulatory concern for olding compounds used by Microchip meet the UL94 Vip://ul.com/global/eng/pages/offerings/industries/chem e protective "tubes" in which the specific product is sirtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informa air original packing materials is true and correct to the protective of the protective of the protective accuracy of data in this form because ormation is often protected from disclosure as trade sovided only as estimates of the average weight of thes dopants, metals, and non-metal materials contained we crochip Technology Incorporated does not provide an	10 flammability standard for place of flammability standard for place of flammability standard for place of flammability standard for polyvir stands in this form concerning subset of its knowledge and be it has been compiled based secrets and some information see parts and the average weig within silicon devices (silicon lay warranty, express or implied and its subsidiaries are contacted and its subsidiaries are contacted and its subsidiaries are contacted.	d-wide.  astics. You can access the UL iQTM family of databases the UL iQTM family of databases the UL iQTM family of databases the unit of the inverse of the unit of the uni	ntration of the o obtain a test old the packing ncorporated's gy Incorporate ovided by raw rand raw materiese estimates outlook.	report at  I slip on the or  semiconducto d cannot guar naterial suppli al suppliers. In to not include	stance, if  Iter box and  Iter devices in Iter the Iter t	1.02	·	7440-57-5	100	0.21
y, is not below the threshold of regulatory concern for olding compounds used by Microchip meet the UL94 Vip://ul.com/global/eng/pages/offerings/industries/chem e protective "tubes" in which the specific product is sittain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informa elir 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 sovided only as estimates of the average weight of thes dopants, metals, and non-metal materials contained we crochip Technology Incorporated does not provide an urranties provided by Microchip Technology Incorporatotations, sales order acknowledgement, and invoices.	10 flammability standard for placeds/plastics/ shipped are made from polyvir ation in this form concerning so best of its knowledge and be to that been compiled based of the secrets and some information see parts and the average weig within silicon devices (silicon I by warranty, express or implied ted and its subsidiaries are color or changes to Material Conter of the users' reliance on the in	d-wide.  astics. You can access the UL iQTM family of databases the unit of th	o obtain a test old the packing ncorporated's gy Incorporate voided by raw n and raw materi ase estimates o tion. The exclu sale. These are	chemical sub report at g slip on the or semiconducto d cannot guar naterial suppli al suppliers. In to not include sive, limited p a provided in I	stance, if  Iter box and  Iter devices in Interesting the Iters. Supplier Iters of s		Doped Gold	7440-57-5  Total  Plating on external leads (pins) - Matte Tin	100	
is not below the threshold of regulatory concern for ding compounds used by Microchip meet the UL94 Vi://ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is si ain "reels" may be made from PVC plastic.  ochip Technology Incorporated believes the informar original packing materials is true and correct to the pleteness and accuracy of data in this form because rmation is often protected from disclosure as trade solided only as estimates of the average weight of these oppants, metals, and non-metal materials contained we ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or third parties as a result or third parties as a result or the services.	10 flammability standard for placeds/plastics/ shipped are made from polyvir ation in this form concerning so best of its knowledge and be to that been compiled based of the secrets and some information see parts and the average weig within silicon devices (silicon I by warranty, express or implied ted and its subsidiaries are color or changes to Material Conter of the users' reliance on the in	d-wide.  astics. You can access the UL iQTM family of databases the unit of th	o obtain a test old the packing ncorporated's gy Incorporate voided by raw n and raw materi ase estimates o tion. The exclu sale. These are	chemical sub report at g slip on the or semiconducto d cannot guar naterial suppli al suppliers. In to not include sive, limited p a provided in I	stance, if  Iter box and  Iter devices in Interesting the Iters. Supplier Iters of s		Doped Gold  (mg) Total	7440-57-5  Total  Platting on external leads (pins) - Matte Tin / annealed at 150°C for	100 100.00 % of Total Weight	

PQ 44 MQFP 10:06 AM : 5/6/2014

ICROCHIP				nation Base pper Alloy ((	,		•	ogeneous Materials: g. pc boards, display	vs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	MS and UA	8 (Lead) MSOP 3x3mm (A3)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	20.43	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	17.364	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.888	1.251	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	4.888	1.251	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.501	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.061	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314		-	Total		
Iron	7439-89-6	Lead Frame	0.247	0.063	2,468	2.69	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.051	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.003	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.144	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.027	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.014	563			Total		
Modified Amine	827-43-0	Die Attach	0.026	0.007	263	0.19	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75,000		Silver (Ag)	7440-22-4	75	
Doped Gold	7440-57-5	Wire Bond	0.200	0.051	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	0.320	12,500	Di	glycidylether of bisphenol-F	54208-63-8	8	
		TOTALS:	100.000	25.600	1,000,000		Modified Amine		4	
		g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65	EU (RoHS R	ecast Directiv	e) and with	1.92	(mg) Total	Total Chip (Die)	100.00 % of Total Weight	7.5
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ith EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65	•	ecast Directiv	ve) and with	1.92	(mg) Total  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  iance with the above EU Directives has been verified via interestion of the common	ith EU Directive 20 nal design controls ubstance is NOT a is document, there	202/95/EC (RoHS Directive), EU Directive 2011/65 202/95/EC (RoHS Directive), EU Directive 2011/65 4, supplier declarations, and /or analytical test da 5 in intentional ingredient in the semiconductor de 6 is no credible reason to believe that the unavoi	ita. vice and, to	the best of Mi	crochip	1.92	,	Chip (Die)	% of Total Weight	7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  iance with the above EU Directives has been verified via interiemical substance is absent from the list above, the chemical sology Incorporated's knowledge and belief as of the date of the all substance, if any, is not below the threshold of regulatory g compounds used by Microchip meet the UL94 V0 flammabil	ith EU Directive 20 nal design controls ubstance is NOT a is document, there concern for any re	002/95/EC (RoHS Directive), EU Directive 2011/65 , supplier declarations, and /or analytical test da n intentional ingredient in the semiconductor de is no credible reason to believe that the unavoi gulatory scheme world-wide.	ta. vice and, to dable impurit	the best of Mi by concentrati	crochip ion of the	0.05	,	Chip (Die) 7440-21-3	% of Total Weight	7.5
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via interinemical substance is absent from the list above, the chemical shology Incorporated's knowledge and belief as of the date of thical substance, if any, is not below the threshold of regulatorying compounds used by Microchip meet the UL94 V0 flammabil /ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are	ith EU Directive 20 nal design controls ubstance is NOT a is document, there concern for any re ty standard for pla	202/95/EC (RoHS Directive), EU Directive 2011/65 , supplier declarations, and /or analytical test da n intentional ingredient in the semiconductor de i is no credible reason to believe that the unavoi gulatory scheme world-wide. stics. You can access the UL IQTM family of dat	vice and, to to dable impurit	the best of Mi ty concentrati tain a test rep	crochip ion of the port at		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Diance with the above EU Directives has been verified via interinemical substance is absent from the list above, the chemical shology Incorporated's knowledge and belief as of the date of thical substance, if any, is not below the threshold of regulatorying compounds used by Microchip meet the UL94 V0 flammabil/ul.com/global/eng/pages/offerings/industries/chemicals/plastic/orotective "tubes" in which the specific product is shipped are abox and certain "reels" may be made from PVC plastic.  Sinchip Technology Incorporated believes the information in this es in their original packing materials is true and correct to the of guarantee the completeness and accuracy of data in this forw material suppliers. Supplier information is often protected from blers and raw material suppliers. Information is provided only is components. These estimates do not include trace levels of a components.	ith EU Directive 20 hal design controls ubstance is NOT a is document, there concern for any re ty standard for pla s/ made from polyving form concerning si best of its knowled in because it has b in disclosure as tr as estimates of the	20/2/95/EC (RoHS Directive), EU Directive 2011/65  , supplier declarations, and /or analytical test da  n intentional ingredient in the semiconductor de is no credible reason to believe that the unavoi gulatory scheme world-wide.  stics. You can access the UL iQTM family of dat  yl chloride (PVC) plastic. "Window envelopes" us  ubstances restricted by RoHS in Microchip Tech ge and belief, as of the date listed in this form. N een compiled based on the ranges provided in N ade secrets and some information may not have a average weight of these parts and the average	vice and, to dable impurification of the dable impurification of the dable impurification of the dable impurity of the dable in the dab	the best of Mi ty concentrati tain a test rep ne packing sli porated's sen chnology Inco y Data Sheet: ed by subcon ticipated sign	icrochip ion of the  port at ip on the miconductor proprated s provided stract ifficant toxic		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight 100	
semiconductor device and its homogenous materials comply wirective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified via internemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulatory ing compounds used by Microchip meet the UL94 V0 flammabil //ul.com/global/eng/pages/offerings/industries/chemicals/plastic box and certain "reels" may be made from PVC plastic.  bothip Technology Incorporated believes the information in this is their original packing materials is true and correct to the ot guarantee the completeness and accuracy of data in this for w material suppliers. Supplier information is often protected from the sand raw material suppliers. Information is provided only is components. These estimates do not include trace levels of a schip Technology Incorporated does not provide any warranty, act warranties provided by Microchip Technology Incorporated does not provide any warranty, act warranties provided by Microchip Technology Incorporated doed in Microchip's quotations, sales order acknowledgement, and the sales and acknowledgement, and the sales and acknowledgement, and the sales are sales and acknowledgement.	th EU Directive 20 nal design controls ubstance is NOT a is document, there concern for any re ty standard for pla s/ made from polyving form concerning si nest of its knowled m because it has b m disclosure as tr as estimates of the lopants, metals, ar express or implied and its subsidiarie	02/95/EC (RoHS Directive), EU Directive 2011/65, supplier declarations, and /or analytical test dan intentional ingredient in the semiconductor det is no credible reason to believe that the unavoigulatory scheme world-wide.  stics. You can access the UL iQTM family of dat /I chloride (PVC) plastic. "Window envelopes" unabstances restricted by RoHS in Microchip Tech ge and belief, as of the date listed in this form. Note that the same compiled based on the ranges provided in Microchip that are average weight of these parts and the average ad non-metal materials contained within silicon of with respect to the information provided in this	vice and, to dable impurit abases to obseed to hold the inclosed incorporate increases and the increase increas	the best of Mity concentration that it at the packing slipporated's sericled by subconticipated sign on IC) in the fit.	crochip ion of the  cort at ip on the miconductor orporated s provided stract ifficant toxic inished e, limited		Doped 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	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  oliance with the above EU Directives has been verified via interihemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical subology incorporated's knowledge and belief as of the date of the lical substance, if any, is not below the threshold of regulatory ing compounds used by Microchip meet the UL94 V0 flammabil //ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are to box and certain "reels" may be made from PVC plastic.  Inchip Technology Incorporated believes the information in this ises in their original packing materials is true and correct to the originarity of the completeness and accuracy of data in this for wind material suppliers. Supplier information is often protected from the sand raw material suppliers. Information is provided only is components. These estimates do not include trace levels of conchip Technology Incorporated does not provide any warranty, act warranties provided by Microchip Technology Incorporated	and design controls ubstance is NOT a is document, there concern for any re ty standard for pla s/ made from polyving form concerning si sest of its knowled m because it has b m disclosure as tr as estimates of the lopants, metals, ar express or implied and its subsidiarie not invoices.	202/95/EC (RoHS Directive), EU Directive 2011/65, supplier declarations, and /or analytical test dan intentional ingredient in the semiconductor de is no credible reason to believe that the unavoigulatory scheme world-wide.  stics. You can access the UL iQTM family of dat vI chloride (PVC) plastic. "Window envelopes" usubstances restricted by RoHS in Microchip Tech ge and belief, as of the date listed in this form. Meen compiled based on the ranges provided in Made secrets and some information may not have a average weight of these parts and the average id non-metal materials contained within sillicon continuation, with respect to the information provided in this is are contained in Microchip's standard terms a Declarations and shall not be liable for any dan eliance on the information in Material Content D	ta.  vice and, to to dable impurification.  abases to obtained to hold the nology Incordiction of the	the best of Mi ty concentration tain a test repose the packing slip porated's senthnology Inco- ty Data Sheet: ed by subcon- ticipated sign on IC) in the fi The exclusives of sale. The or indirect,	icrochip ion of the port at ip on the miconductor orporated s provided ttract dificant toxic inished e, limited se are	0.05	Doped Silicon  (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	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2

MS UA 08 MSOP 10:07 AM : 5/6/2014

AICROCHIP  Semiconductor Device Typ	e: UN 10 (Lead) MS	SOP 3x3mm (E3)		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	6.66	(mg) Total	Mold Compound	% ot Total Weight	28.71
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	i	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	1	Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.703	0.163	7,034	1	Epoxy, Cresol Novolac	29690-82-2	2.45	
Čarbon Black	1333-86-4	Mold Compound	0.086	0.020	861	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	42.830	9.937	428,299	1	,	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	i	Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.045	0.010	450	1	Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.601	0.139	6.006	1	Silicon	7440-21-3	0.45	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.139	0.032	1,386	1	Magnesium	7439-95-4	0.10	
Treated silica	Trade Secret	Die Attach	0.015	0.004	154			Total		
Heterocyclic organic compound	Trade Secret	Die Attach	0.015	0.004	154	0.18	(mg) Total	Die Attach	% of Total Weight	0.77
	7440-21-3		2.800	0.650	28,000	0.18		7440-22-4		0.77
Silicon Gold	7440-21-3	Chip (Die) Wire Bond	0.680	0.650	6.800	l	Silver		78	
							Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 Plati	ing on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	22.070	5.120 <b>23.200</b>	220,700 1,000,000		Treated silica	Trade Secret	2	
s semiconductor device and its homogenous materials comply ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.0232 g 7 with EU Directive 2002/		100.000 EU (RoHS Rec		, ,	0.65	rocyclic organic compound  Total (mg)	Trade Secret  Total  Chip (Die)	_	2.8
s semiconductor device and its homogenous materials comply 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 hnology Incorporated's knowledge and belief as of the date of	r with EU Directive 2002/ ernal design controls, so Il substance is NOT an ir	Fotal Mass 95/EC (RoHS Directive), EU Directive 2011/65/ upplier declarations, and /or analytical test data ntentional ingredient in the semiconductor dev	EU (RoHS Rec ta. vice and, to the	cast Directive)	and with EU			Total	100.00 % of Total Weight	2.8
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via interpretable the discovered by the chemical substance is absent from the list above, the chemical hoology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulator ding compounds used by Microchip meet the UL94 V0 flamma://ul.com/global/eng/pages/offerings/industries/chemicals/plas/	with EU Directive 2002/ ernal design controls, so al substance is NOT an in this document, there is ry concern for any regul- bility standard for plastics/	Fotal Mass 95/EC (RoHS Directive), EU Directive 2011/65/ upplier declarations, and /or analytical test dai ntentional ingredient in the semiconductor dec no credible reason to believe that the unavoic atory scheme world-wide. cs. You can access the UL iQTM family of data	EU (RoHS Rec ta. vice and, to th dable impurity abases to obta	e best of Micr concentration	and with EU ochip n of the		Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	2.8
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via interpretable. The chemical substance is absent from the list above, the chemical hoology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulator ding compounds used by Microchip meet the UL94 VO flamma	with EU Directive 2002/ ernal design controls, so al substance is NOT an in this document, there is ry concern for any regul- bility standard for plastics/	Fotal Mass 95/EC (RoHS Directive), EU Directive 2011/65/ upplier declarations, and /or analytical test dai ntentional ingredient in the semiconductor dec no credible reason to believe that the unavoic atory scheme world-wide. cs. You can access the UL iQTM family of data	EU (RoHS Rec ta. vice and, to th dable impurity abases to obta	e best of Micr concentration	and with EU ochip n of the	0.65	Total (mg)  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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via interpretable to the chemical substance is absent from the list above, the chemical hology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulator ding compounds used by Microchip meet the UL94 V0 flamma://ul.com/global/eng/pages/offerings/industries/chemicals/plator protective "tubes" in which the specific product is shipped a	r with EU Directive 2002/ ernal design controls, so all substance is NOT an in this document, there is try concern for any regul- bility standard for plastic stics/ re made from polyvinyl c is form concerning subs- tie best of its knowledge orm because it has beer m disclosure as trade se tites of the average weight	Fotal Mass 195/EC (RoHS Directive), EU Directive 2011/65/ upplier declarations, and /or analytical test dat netentional ingredient in the semiconductor dev no credible reason to believe that the unavoic latory scheme world-wide.  cs. You can access the UL iQTM family of data chloride (PVC) plastic. "Window envelopes" us stances restricted by RoHS in Microchip Techr and belief, as of the date listed in this form. M necrets and some information may not have bee the of these parts and the average weight of an	EU (RoHS Recta.  vice and, to the dable impurity abases to obtated to hold the mology Incorpolicrochip Technaterial Safety provided by ticipated signi	e best of Microconcentration in a test report e packing slip orated's semic nology Incorp Data Sheets p y subcontraction	and with EU  ochip n of the  rt at  on the outer  conductor orated orovided by assemblers etals	0.65	Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
inctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via introchemical substance is absent from the list above, the chemical handles in the date of mical substance, if any, is not below the threshold of regulato ding compounds used by Microchip meet the UL94 VO flamma: "//ul.com/global/eng/pages/offerings/industries/chemicals/platiprotective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information in the interioriginal packing materials is true and correct to the trot guarantee the completeness and accuracy of data in this interioriginal packing materials usppliers. Supplier information is often protected from a material suppliers. Information is provided only as estimaterial suppliers.	rwith EU Directive 2002/c ernal design controls, stall substance is NOT an ir it this document, there is ry concern for any regul- bility standard for plastic stics/ re made from polyvinyl c is form concerning substate best of its knowledge orm because it has beer m disclosure as trade se tes of the average weigh ints, metals, and non-met ry, express or implied, wied and its subsidiaries a	Fotal Mass 195/EC (RoHS Directive), EU Directive 2011/65/ upplier declarations, and /or analytical test dai ntentional ingredient in the semiconductor dev no credible reason to believe that the unavoid latory scheme world-wide.  cs. You can access the UL iQTM family of data chloride (PVC) plastic. "Window envelopes" us stances restricted by RoHS in Microchip Techr and belief, as of the date listed in this form. M n compiled based on the ranges provided in M screts and some information may not have bee th of these parts and the average weight of an tal materials contained within silicon devices ( ith respect to the information provided in this	EU (RoHS Recta.  vice and, to the dable impurity abases to obtate to hold the mology Incorpolicrochip Tech laterial Safety en provided by ticipated signi (silicon IC) in the declaration. T	e best of Microconcentration in a test report e packing slip orated's semic nology Incorp Data Sheets p y subcontract ificant toxic m the finished pa	and with EU  ochip n of the  rt at  on the outer  conductor oravided by assemblers etals arts.  limited	0.65	Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (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	· · · · · ·
inctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via introchemical substance is absent from the list above, the chemical hology 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://lul.com/global/eng/pages/offerings/industries/chemicals/platprotective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information in the interior in the completeness and accuracy of data in this interior alsuppliers. Information is often protected from award autoprotected from award autoprotected from award autoprotected from a material suppliers. Information is provided only as estimate properties. These estimates do not include trace levels of dopa rochip Technology Incorporated does not provide any warrand duct warranties provided by Microchip Technology Incorporated ducy in the complete incorporated does not provide any warrand duct warranties provided by Microchip Technology Incorporated ducy in the complete incorporated does not provide any warrand duct warranties provided by Microchip Technology Incorporated ducy in the complete incorporated does not provide any warrand duct warranties provided by Microchip Technology Incorporated does not provide any warrand duct warranties provided by Microchip Technology Incorporated does not provide any warrand duct warranties provided by Microchip Technology Incorporated does not provide any warrand duct warranties provided by Microchip Technology Incorporated does not provide any warrand duct warranties provided by Microchip Technology Incorporated does not provide any warrand duct warranties provided by Microchip Technology Incorporated does not provide any warrand duct warranties provided by Microchip Technology Incorporated does not provide any warrand duct warranties provided by Microchip Technology	rwith EU Directive 2002/ ernal design controls, su all substance is NOT an ir this document, there is try concern for any regul- bility standard for plastic stics/ er made from polyvinyl c is form concerning subsue best of its knowledge form because it has beer form disclosure as trade se tes of the average weigh nts, metals, and non-met ry, express or implied, wi ed and its subsidiaries a t, and invoices.  The standard Content De tesers' reliance on the info	Fotal Mass 95/EC (RoHS Directive), EU Directive 2011/65/ upplier declarations, and /or analytical test data intentional ingredient in the semiconductor dev no credible reason to believe that the unavoic latory scheme world-wide.  cs. You can access the UL iQTM family of data schloride (PVC) plastic. "Window envelopes" us stances restricted by RoHS in Microchip Techr and belief, as of the date listed in this form. M n compiled based on the ranges provided in M necrets and some information may not have been that of these parts and the average weight of an tall materials contained within silicon devices ( ith respect to the information provided in this are contained in Microchip's standard terms ar eclarations and shall not be liable for any dam	EU (RoHS Recta.  vice and, to the dable impurity abases to obtate of the date of the dable of th	e best of Microconcentration in a test report e packing slip orated's semic mology Incorp Data Sheets p y subcontract ificant toxic m the finished pa the exclusive, of sale. These	and with EU  ochip n of the  rt at  on the outer  conductor orated provided by assemblers etals arts.  limited are are	0.65	Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (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	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.68

UN 10 MSOP 10:07 AM : 5/6/2014

AICROCHIP  Semiconductor Device Type: P and PA 8 (Lead) PDIP (Small Outline300") (C4 / CK)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	ce Type: Pand PA 8 (I	Lead) PDIP (Small Outline300") (C4 / CK)  "Contained In"	% Total		1			1		
Basic Substance	CAS Number	Sub-Component	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		Silver	7440-22-4	73.36	
Dicyandiamide	461-58-5	Die Attach	0.002	0.009	18		Epoxy Resin	9003-36-5	14.67	
Silicon	7440-21-3	Chip (Die)	7.500	36.503	75,000		Diluent	3101-60-8	7.33	
Doped Gold	7440-57-5	Wire Bond	0.200	0.973	2,000		Phenolic hardener	Trade secret	2.93	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500		Amine type hardener	827-43-0	1.47	
		TOTALS:	100.000	486.700	1,000,000		Dicyandiamide	461-58-5	0.24	
	0.4867	g Total Mass					.,,	Total	100.00	
		5	oHS Recast I	Directive) and	with EU	36.50	(mg) Total			7.5
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive 2002	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (R	oHS Recast I	Directive) and	with EU	36.50	,	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  upliance with the above EU Directives has been verified we  chemical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the distance, if any, is not below the threshold of regulatory co	omply with EU Directive 2002  via internal design controls, a  emical substance is NOT an  ate of this document, there is  nocern for any regulatory scl	2/295/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device as s no credible reason to believe that the unavoidable i heme world-wide.	nd, to the bes	st of Microchip entration of the	<b>.</b>	36.50	(mg) Total	Total Chip (Die)	100.00 % of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). apliance with the above EU Directives has been verified we chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is an endered's knowledge and belief as of the distance, if any, is not below the threshold of regulatory coulding compounds used by Microchip meet the UL94 V0 flat	omply with EU Directive 2002 via internal design controls, a emical substance is NOT an ate of this document, there is oncern for any regulatory sci ammability standard for plass	2/295/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device as s no credible reason to believe that the unavoidable i heme world-wide.	nd, to the bes	st of Microchip entration of the	<b>.</b>	36.50	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.5
ictive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified with the above EU Directives has been verified with the common state of the distance, if any, is not below the threshold of regulatory coding compounds used by Microchip meet the UL94 V0 file://ul.com/global/eng/pages/offerings/industries/chemical-protective "tubes" in which the specific product is shipp	omply with EU Directive 2002 via internal design controls, via internal substance is NOT an ate of this document, there is oncern for any regulatory sclammability standard for plasts/plastics/	2/295/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device as no credible reason to believe that the unavoidable i heme world-wide. tics. You can access the UL iQTM family of database	nd, to the bes mpurity cond s to obtain a	st of Microchip entration of the test report at	o ne chemical		(mg) Total  Doped Silicon	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00	
netive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  npliance with the above EU Directives has been verified working in the properties of the distance of the distance, if any, is not below the threshold of regulatory of ding compounds used by Microchip meet the UL94 V0 file:  "//ul.com/global/eng/pages/offerings/industries/chemical- protective "tubes" in which the specific product is ships certain "reels" may be made from PVC plastic.  "rochip Technology Incorporated believes the information ices in their original packing materials is true and correctantee the completeness and accuracy of data in this for pilers. Supplier information is often protected from discleptiers. Information is provided only as estimates of the a	omply with EU Directive 2002 via internal design controls, a emical substance is NOT an ate of this document, there is oncern for any regulatory sclammability standard for plast s/plastics/ or any regulatory sclammability standard for plast s/plastics/ or any regulatory sclammability standard for plast s/plastics/ or any regulatory size are made from polyvinyl in this form concerning substantial to the best of its knowledgern because it has been composure as trade secrets and s verage weight of these parts and s verage weight of these parts	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device as son credible reason to believe that the unavoidable i heme world-wide. tics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to ostances restricted by RoHS in Microchip Technology e and belief, as of the date listed in this form. Microclided based on the ranges provided in Material Safety some information may not have been provided by sub a and the average weight of anticipated significant tox.	nd, to the best mpurity concurs to obtain a hold the pact Incorporate hip Technolo Data Sheets occontract ass cic metals co	et of Microchip entration of the test report at king slip on the d's semiconde gy Incorporate provided by r emblers and r	ne chemical ne outer box actor ad cannot aw material aw material		(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	
is semiconductor device and its homogenous materials of ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified of the chinology incorporated's knowledge and belief as of the distance, if any, is not below the threshold of regulatory of the compounds used by Microchip meet the UL94 V0 flap; if the compounds used by Microchip meet the UL94 V0 flap; if the compounds used by Microchip meet the UL94 V0 flap; if the compounds used by Microchip meet the UL94 V0 flap; if the compounds used by Microchip meet the UL94 V0 flap; if the compounds used by Microchip meet the UL94 V0 flap; if the compounds used by Microchip meet the UL94 V0 flap; if the compounds with the specific product is shipped certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information vices in their original packing materials is true and correct arantee the completeness and accuracy of data in this for poliers. Supplier information is often protected from disclappilers. Information is provided only as estimates of the a timates do not include trace levels of dopants, metals, and corrochip Technology Incorporated does not provide any was rranties provided by Microchip Technology Incorporated corochip's quotations, sales order acknowledgement, and is	omply with EU Directive 2002 via internal design controls, a emical substance is NOT an ate of this document, there is oncern for any regulatory sclammability standard for plast s/plastics/ or any standard from polyvinyl or the best of its knowledgern because it has been composure as trade secrets and s verage weight of these parts of non-metal materials contain arranty, express or implied, and its subsidiaries are contained.	2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/	nd, to the besimpurity concists to obtain a hold the pace incorporate hip Technologian Technolog	st of Microchij entration of the test report at king slip on the d's semicondi gy Incorporate provided by r emblers and r mponents. The	ne chemical ne outer box uctor ned cannot aw material aw material ese		(mg) Total  Doped Silicon  (mg) Total  Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified with emical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the distance, if any, is not below the threshold of regulatory or ling compounds used by Microchip meet the UL94 V0 file //ul.com/global/eng/pages/offerings/industries/chemical-protective "tubes" in which the specific product is shipportain "reels" may be made from PVC plastic.  Orchip Technology Incorporated believes the information can their original packing materials is true and correct antee the completeness and accuracy of data in this for silers. Supplier information is often protected from disclabilers. Information is provided only as estimates of the anates do not include trace levels of dopants, metals, and orchip Technology Incorporated does not provide any was anties provided by Microchip Technology Incorporated	omply with EU Directive 2002 via internal design controls, a emical substance is NOT an ate of this document, there is oncern for any regulatory sci ammability standard for plast s/plastics/ oed are made from polyvinyl  in this form concerning sub t to the best of its knowledge m because it has been comp osure as trade secrets and s verage weight of these parts d non-metal materials contain arranty, express or implied, va and its subsidiaries are cont nvoices.	Zigos/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device as son credible reason to believe that the unavoidable in heme world-wide. tics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to estances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Microchipled based on the ranges provided in Material Safety to me information may not have been provided by substances with the substance with the substance with the substance of the date listed in this form. Microchipled based on the ranges provided in Material Safety to me information may not have been provided by substance with the substance of t	nd, to the besimpurity concists to obtain a hold the pace in Incorporate hip Technolo Data Sheets occontract associate metals coparts.	st of Microchi, entration of the test report at king slip on the d's semiconde gy Incorporate provided by remblers and remblers and remblers and remblers and remblers and remblers and remponents. The exclusive, limite e are provided	ne chemical ne outer box uctor ned cannot aw material aw material ese ed product in	0.97	(mg) Total  Doped Silicon  (mg) Total  Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total  Plating on external leads (pins) - Matte Tin / analed at 150°C for 1	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2

P PA 08 PDIP 10:07 AM: 5/6/2014

Semiconductor Device Type: P and PE 14 (Lead) PDIP (Small Outline300") (D2 / DF)  "Contained in"				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	760.73	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	547.728	574,560	1	Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	83.681	87,780	1	Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	53.251	55,860	1	Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.586	53.251	55,860	]	Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.995	19.018	19,950		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.399	3.804	3,990	]	Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	10.031	95.630	100,314			Total		
Iron	7439-89-6	Lead Frame	0.247	2.352	2,468	100.10	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	1.907	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.125	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.083	87		Silver	7440-22-4	1.91	
Silver Diester Resin	7440-22-4 94-80-4	Die Attach	0.563	5.362 1.072	5,625		Zinc	7440-66-6	0.13	
		Die Attach	0.113	0.357	1,125		Phosphorous	7723-14-0	0.08	
Functionalized Urethane Resin	72869-86-4	Die Attach	0.038		375			Total		
Epoxy Resin	9003-36-5	Die Attach Die Attach	0.019	0.179 0.179	188	7.15	(mg) Total	Die Attach	% of Total Weight	0.75
Epoxy Resin Silicon	13561-08-5 7440-21-3	Chip (Die)	7.500	71.498	188 75,000		Silver Diester Resin	7440-22-4	75	
Gold	7440-21-3	Wire Bond	0.200	1.907	2,000	F	tionalized Urethane Resin	94-80-4 72869-86-4	15 5	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	11.916	12.500	Func	Epoxy Resin	9003-36-5	3	
	7440-31-3			953 300	1 000 000				3	
emiconductor device and its homogenous materials c	0.9533	TOTALS: g Total Mass	100.000	953.300 ast Directive) a	1,000,000 and with EU	71.50	Epoxy Resin	13561-08-5 Total	3	7.5
emiconductor device and its homogenous materials or ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified emical substance is absent from the list above, the ch	0.9533 comply with EU Directive 20 via internal design control nemical substance is NOT	TOTALS:  g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/ti is, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor dev	100.000 EU (RoHS Reca	ast Directive) a	and with EU	71.50	Epoxy Resin	13561-08-5 <b>Total</b>	3 100.00 % of Total Weight	7.5
emiconductor device and its homogenous materials of the 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified temical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the official substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl	0.9533 comply with EU Directive 20 via internal design control nemical substance is NOT date of this document, ther gulatory concern for any re ammability standard for pl	TOTALS:  g Total Mass  0002/95/EC (RoHS Directive), EU Directive 2011/65/E  is, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor dev re is no credible reason to believe that the unavoid egulatory scheme world-wide.	100.000 EU (RoHS Reca a. ice and, to the able impurity c	best of Microconcentration	and with EU chip of the	71.50	Epoxy Resin	13561-08-5 Total Chip (Die) 7440-21-3	3 100.00 % of Total Weight	7.5
semiconductor device and its homogenous materials of 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 chology Incorporated's knowledge and belief as of the chical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.	0.9533 comply with EU Directive 20 via internal design control nemical substance is NOT late of this document, ther gulatory concern for any re ammability standard for pl ls/plastics/	TOTALS:  g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/65/E  is, supplier declarations, and /or analytical test dat 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	100.000 EU (RoHS Reca a. ice and, to the able impurity c bases to obtain	best of Micro concentration	and with EU		Epoxy Resin  Total (mg)  Doped Silicon	13561-08-5 Total Chip (Die) 7440-21-3 Total	3 100.00 % of Total Weight 100 100.00	
semiconductor device and its homogenous materials of the 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 chology Incorporated's knowledge and belief as of the onical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl/ful.com/global/eng/pages/offerings/industries/chemicaprotective "tubes" in which the specific product is ship	0.9533 comply with EU Directive 20 via internal design control memical substance is NOT late of this document, ther gulatory concern for any re ammability standard for pl ls/plastics/ ped are made from polyvir in in this form concerning s to the best of its knowler rm because it has been co com disclosure as trade se nates of the average weigh	TOTALS:  g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/65/E  is, supplier declarations, and /or analytical test dat 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" use substances restricted by RoHS in Microchip Techn dge and belief, as of the date listed in this form. Mi impilled based on the ranges provided in Material S icrets and some information may not have been pr int of these parts and the average weight of anticips	a.  ice and, to the able impurity cobases to obtain the following the fo	best of Micro concentration in a test report packing slip o rated's semico ology Incorpo sets provided contract asser t toxic metals s	and with EU  chip of the  at  n the outer  onductor rated cannot by raw nblers and	1.91	Epoxy Resin  Total (mg)  Doped Silicon  (mg) Total	13561-08-5 Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	3 100.00 % of Total Weight 100 100.00 % of Total Weight	
semiconductor device and its homogenous materials of titive 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 chanology Incorporated's knowledge and belief as of the onical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl/ful.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Sochip Technology Incorporated believes the information ses in their original packing materials is true and correct antee the completeness and accuracy of data in this for rial suppliers. Supplier information is often protected finaterial suppliers. Information is provided only as estin	0.9533 comply with EU Directive 20 via internal design control memical substance is NOT date of this document, ther gulatory concern for any re ammability standard for pl ls/plastics/ ped are made from polyvir in in this form concerning s at to the best of its knowled rm because it has been co rom disclosure as trade se nates of the average weigh als, and non-metal materic marranty, express or implie- rporated and its subsidiari	TOTALS:  g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/65/E  is, supplier declarations, and /or analytical test dat 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" use substances restricted by RoHS in Microchip Techn dge and belief, as of the date listed in this form. Mi impilled based on the ranges provided in Material S increts and some information may not have been pr int of these parts and the average weight of anticipe als contained within silicon devices (silicon IC) in ti d, with respect to the information provided in this of	a.  ice and, to the able impurity or bases to obtain the following the following the following the following the significant of finished par declaration. The	best of Micro- concentration  n a test report  packing slip o  rated's semico- logy Incorpo- lest provided contract asser  t toxic metals of the contract asser  tests.	and with EU  chip of the  at  n the outer  onductor rated cannot by raw mblers and components.	1.91	Epoxy Resin  Total (mg)  Doped Silicon  (mg) Total  Doped Gold	13561-08-5 Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	3 100.00 % of Total Weight 100 100.00 % of Total Weight	
semiconductor device and its homogenous materials of the 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 chology Incorporated's knowledge and belief as of the onlical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fl/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. The protective "tubes in their original packing materials is true and corrective in the intervence in	0.9533 comply with EU Directive 20 via internal design control nemical substance is NOT late of this document, ther gulatory concern for any re ammability standard for pl Is/plastics/ ped are made from polyvir n in this form concerning s to to the best of its knowler rm because it has been co rom disclosure as trade se nates of the average weigh als, and non-metal materic rarranty, express or implie rporated and its subsidiari nd invoices. changes to Material Conter te users' reliance on the in	TOTALS:  g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/65/E  is, supplier declarations, and /or analytical test dat 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" use substances restricted by RoHS in Microchip Techn dge and belief, as of the date listed in this form. Mi mpiled based on the ranges provided in Material S ecrets and some information may not have been pr at of these parts and the average weight of anticipe als contained within silicon devices (silicon IC) in ti d, with respect to the information provided in this of es are contained in Microchip's standard terms an	a.  ice and, to the able impurity or bases to obtain add to hold the policy linear process of the conditions of the cond	best of Microconcentration  n a test report  packing slip o  rated's semiccology Incorpo- pets provided contract assert toxic metals at the contract as the contract assert toxic metals at the contract as the co	and with EU  chip of the  at  n the outer  productor rated cannot by raw nblers and components.  mited are provided equential or	1.91	Epoxy Resin  Total (mg)  Doped Silicon  (mg) Total  Doped Gold	13561-08-5 Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	3 100.00 % of Total Weight 100 100.00 % of Total Weight 100	0.2

P PE 14 PDIP 10:08 AM : 5/6/2014

Semiconductor Device Type: P and PE 16 (Lead) PDIP (Small Outline300") (D6 / DU)	748.8			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Silica, vitreous         60676-86-0         Mold Compound         57.205         636.503         572.           Epoxy Resin (No bromine, No diantimony trioxide)         Trade Secret         Mold Compound         4.122         45.866         41,2           Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)         Trade Secret         Mold Compound         4.122         45.866         44,2				]			
Epoxy Resin (No bromine, No diantimony trioxide) Trade Secret Mold Compound 4.122 45.866 41,2  Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Trade Secret Mold Compound 4.122 45.866 41,2	1 /48.8	3 (mg) Total	Mold Compound	% ot Total Weight	67.3		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Trade Secret Mold Compound 4.122 45.866 41,2	50	Silica, vitreous	60676-86-0	85.00			
	21	Epoxy Resin	Trade Secret	6.13			
Frank Creed Navelee 20000 02.2 Mold Company 4 040 40.246 40.4		Phenolic Resin	Trade Secret	6.13			
		Epoxy, Cresol Novolac	29690-82-2	2.45			
Carbon Black         1333-86-4         Mold Compound         0.202         2.246         2,0		Carbon Black	1333-86-4	0.30			
Copper 7440-50-8 Lead Frame 29.426 327.409 294,			Total				
Iron 7439-89-6 Lead Frame 0.724 8.054 7,2	8 <b>342.7</b>	0 (mg) Total	Lead Frame	% of Total Weight	30.8		
Silver 7440-22-4 Lead Frame 0.587 6.528 5,8		Copper	7440-50-8	95.54			
Zinc 7440-66-6 Lead Frame 0.039 0.428 38		Iron	7439-89-6	2.35			
Phosphorous 7723-14-0 Lead Frame 0.025 0.283 25		Silver	7440-22-4	1.91			
Silver 7440-22-4 Die Attach 0.052 0.576 51		Zinc	7440-66-6	0.13			
Epoxy resin Trade Secret Die Attach 0.016 0.179 16		Phosphorous	7723-14-0	0.08	1		
Gamma-butyrolactone 96-48-0 Die Attach 0.002 0.023 2°			Total	100.00			
Silicon 7440-21-3 Chip (Die) 0.150 1.669 1.51	0.78	(mg) Total	Die Attach	% of Total Weight	0.07		
Gold 7440-57-5 Wire Bond 0.040 0.445 40		Silver	7440-22-4	74			
Tin 7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 1.640 18.248 16.4	00	Epoxy resin	Trade Secret	23			
TOTALS: 100.000 1,112.670 1,000	000	Gamma-butyrolactone		3			
1.1127 g Total Mass			Total	100.00	ı		
mical 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		<u> </u>	Total	100.00	I		
cal substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.	-						
	0.45	(mg) Total	Wire Bond	% of Total Weight	0.04		
/ul.com/global/eng/pages/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 o		(mg) Total  Doped Gold	7440-57-5	100	0.04		
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 Vul.com/global/eng/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 o and certain "reels" may be made from PVC plastic.  The productive "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 orange in the orange in the productive in the 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 cantee the 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 rial suppliers. Supplier information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals soonents. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.	nnot	( 3, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4,		100	0.04		
/ul.com/global/eng/pages/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 o and certain "reels" may be made from PVC plastic.  pochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconducts are 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 contents antee the 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 rial suppliers. Supplier information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals	nnot	Doped Gold	7440-57-5	100	1.64		
VI.com/global/eng/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 o nd certain "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconduct 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 contents the 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 ital suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers inaterial suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals onents. These estimates 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 tot warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are prov	nnot nd ded 18.25	Doped Gold	7440-57-5  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100			

P 16 PDIP 10:08 AM : 5/6/2014

Semiconductor Device Type: P 18 (Lead) PDIP .300" (F3 / FP)  "Contained In"				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	0.554	6.908	5,535		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.141	1.760	1,410		Phosphorous	7723-14-0	0.08	
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.047	0.590	473			Total	100.00	
Phenolic hardener	92-88-6	Die Attach	0.002	0.028	23	9.36	(mg) Total	Die Attach	% of Total Weight	0.75
Butyl cellosolve acetate	112-07-2	Die Attach	0.006	0.075	60		Silver	7440-22-4	74	
Silicon	7440-21-3	Chip (Die)	7.500	93,600	75,000		Epoxy Resin	9003-36-5	19	
Gold	7440-57-5	Wire Bond	0.200	2.496	2.000	t.	-Butyl phenyl glycidyl ether	3101-60-8	6	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1,250	15,600	12,500	,	Phenolic hardener	92-88-6	0	
••••	1	TOTALS:								
			100.000	1.248.000	1.000.000		Butyl cellosolye acetate	112-07-2	1	
		g Total Mass		1,248.000 cast Directive	1,000,000 and with EU	93.60	Butyl cellosolve acetate  Total (mg)	Total Chip (Die)	1 100.00 % of Total Weight	7.5
octive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above.	omply with EU Directive 2 via internal design contro emical substance is NOT	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/6 s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of	5/EU (RoHS Red lata. evice and, to th	cast Directive	and with EU	93.60		Total		7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Ipliance with the above EU Directives has been verified the shemical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the distribution of the shemical substance, if any, is not below the threshold of reguling compounds used by Microchip meet the UL94 V0 flight	omply with EU Directive 2 via internal design contro emical substance is NOT ate of this document, the julatory concern for any r ammability standard for p	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/6 s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of the is no credible reason to believe that the unavo- egulatory scheme world-wide.	5/EU (RoHS Red lata. evice and, to th idable impurity	cast Directive	and with EU	93.60	Total (mg)	Total Chip (Die) 7440-21-3	% of Total Weight	7.5
s semiconductor device and its homogenous materials concerve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chinology incorporated's knowledge and belief as of the dimical substance, if any, is not below the threshold of regiding compounds used by Microchip meet the UL94 V0 flict/ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.	omply with EU Directive 2 via internal design contro emical substance is NOT ate of this document, the julatory concern for any re ammability standard for pa s/plastics/	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/6 is, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of the is no credible reason to believe that the unavo- egulatory scheme world-wide. astics. You can access the UL iQTM family of da	5/EU (RoHS Red lata. evice and, to th pidable impurity	cast Directive	and with EU rochip n of the		Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified  chemical substance is absent from the list above, the ch  hnology Incorporated's knowledge and belief as of the d  mical substance, if any, is not below the threshold of 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 ship  and certain "reels" may be made from PVC plastic.   rochip Technology Incorporated believes the information  ices in their original packing materials is true and correct  not guarantee the completeness and accuracy of data in  material suppliers. Supplier information is often protect  raw material suppliers. Information is provided only as a  material suppliers.	omply with EU Directive 2 via internal design control emical substance is NOT ate of this document, the julatory concern for any r ammability standard for p is/plastics/ ped are made from polyvia in this form concerning it to the best of its knowle this form because it has defrom disclosure as trace setimates of the average v	g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/6  is, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of re is no credible reason to believe that the unavous egulatory scheme world-wide.  lastics. You can access the UL iQTM family of dainly chloride (PVC) plastic. "Window envelopes" to substances restricted by RoHS in Microchip Tecdage and belief, as of the date listed in this form. been compiled based on the ranges provided in the secrets and some information may not have be reight of these parts and the average weight of a	bital (RoHS Red lata.  evice and, to the lidable impurity litabases to obta used to hold the hnology Incorp Microchip Tech Material Safety inticipated sign	ne best of Microconcertation ain a test report e packing slip to rated's seminology Incorporated Sheets in Sheets in Subscription of the contract ifficant toxic microcontract in the contract	ond with EU  rochip n of the  rt at  on the outer  conductor  conductor  corated  provided by assemblers  etals		Total (mg)  Doped Silicon  (mg) Total	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).  Impliance with the above EU Directives has been verified of chemical substance is absent from the list above, the chandlogy incorporated's knowledge and belief as of the direction of the chemical substance, if any, is not below the threshold of regiding compounds used by Microchip meet the UL94 V0 floor.  If will.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship.	omply with EU Directive 2 via internal design control emical substance is NOT ate of this document, the julatory concern for any r ammability standard for p is/plastics/ ped are made from polyvia in in this form concerning t to the best of its knowle this form because it has ed from disclosure as trace setimates of the average v dopants, metals, and non arranty, express or implie porated and its subsidiari	g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/6  is, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of re is no credible reason to believe that the unavous egulatory scheme world-wide.  lastics. You can access the UL iQTM family of dainly chloride (PVC) plastic. "Window envelopes" to substances restricted by RoHS in Microchip Tecdige and belief, as of the date listed in this form. been compiled based on the ranges provided in the secrets and some information may not have beight of these parts and the average weight of a metal materials contained within silicon deviced, with respect to the information provided in this	ata.  evice and, to the idable impurity trabases to obtained the impurity stabases to obtained the idable impurity in the idable	ne best of Microconcertation ain a test report e packing slip to a	on the outer conductor con		Total (mg)  Doped 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	
tive 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 chanology Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fing compounds used by Microchip meet the UL94 V0 fing compounds used by Microchip meet the UL94 V0 find industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Social procession of the protective in their original packing materials is true and correct of guarantee the completeness and accuracy of data in material suppliers. Supplier information is often protect aw material suppliers. Information is provided only as a conents. These estimates do not include trace levels of social prechnology Incorporated does not provide any we use twarranties provided by Microchip Technology Incorporated was provided by Microchip Technology Incorporated w	omply with EU Directive 2 via internal design control emical substance is NOT ate of this document, the julatory concern for any r ammability standard for p is/plastics/ ped are made from polyvia in in this form concerning it to the best of its knowle this form because it has defrom disclosure as trace stimates of the average v dopants, metals, and nor arranty, express or implie porated and its subsidiar ement, and invoices. hanges to Material Contei the users' reliance on the	g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/6  is, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of the is no credible reason to believe that the unavoing egulatory scheme world-wide.  astics. You can access the UL iQTM family of dainly chloride (PVC) plastic. "Window envelopes" to substances restricted by RoHS in Microchip Teck dige and belief, as of the date listed in this form. been compiled based on the ranges provided in the secrets and some information may not have be registed in the secrets and some information may not have be registed in the secrets and some information may not have be registed in the secrets and some information may not have be registed in the secrets and some information provided in this example. The secret is a secontained in Microchip's standard terms are contained in Microchip's standard terms.	stata.  evice and, to the idable impurity trabases to obtain the idable impurity trabases to obtain the idable impurity trabases to obtain the idable impurity it abases to obtain the idable in idable idable in idable	ne best of Microconcentration ain a test report a packing slip orated's seminology incorp y subcontract ifficant toxic in the finished property of sale. These or indirect, cor	and with EU  rochip n of the  rt at  on the outer  conductor provided by assemblers tetals arts.  limited a are asequential	2.50	Total (mg)  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	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2

P 18 PDIP 10:08 AM : 5/6/2014

Semiconductor Device Type: P 20 (Lead) PDIP .300" (G6 / GV) "Contained In"				nation Base A	•	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance			% Total Weight			1045.39	(mg) Total	Mold Compound	% ot Total Weight	69.1
	CAS Number	•		mg/part	ppm		F 1077		70.00	
Fused Silica Metal Hydro Oxide	60676-86-0 Trade Secret	Mold Compound  Mold Compound	49.752 7.601	752.683 114.993	497,520 76,010		Fused Silica Metal Hydro Oxide	60676-86-0 Trade Secret	72.00 11.00	
Epoxy Resin	Trade Secret	Mold Compound	4.837	73.178	48,370		Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	4.837	73.178	48.370		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.728	26.135	17,275		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.346	5.227	3,455		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	27.687	418.865	276.868		Garbert Black	Total	100.00	
Iron	7439-89-6	Lead Frame	0.681	10.303	6,810	438.43	(mg) Total	Lead Frame	% of Total Weight	28.98
Silver	7440-22-4	Lead Frame	0.552	8.352	5,521	400.40	Copper	7440-50-8	95.54	20.50
Zinc	7440-66-6	Lead Frame	0.036	0.548	362		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.030	0.362	239		Silver	7440-22-4	1.91	
Silver (Aa)	7440-22-4	Die Attach	0.068	1.021	675		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.013	0.191	126		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.007	0.102	68		1 Hoophorodo	Total	100.00	
Modified Amine	827-43-0	Die Attach	0.003	0.048	32	1.36	(mg) Total	Die Attach	% of Total Weight	0.09
Silicon	7440-21-3	Chip (Die)	0.300	4.539	3.000	1.50	Silver (Aa)	7440-22-4	75	0.03
Gold	7440-21-3	Wire Bond	0.020	0.303	200		Modified Epoxy Resin	13561-08-5	14	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.510	22.844	15,100		Diglycidylether of bisphenol	54208-63-8	8	
1111	7440-31-3	TOTALS:	100.000	1,512.870	1,000,000		Modified Amine	827-43-0	4	
	4.5400	Total Mass	100.000	1,312.070	1,000,000		Modified Affiline	027-43-0 Total	100.00	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via in	nternal design control:	s, supplier declarations, and /or analytical test d	ata.				Doped Silicon	7440-21-3	100	
chemical substance is absent from the list above, the chemichnology Incorporated's knowledge and belief as of the date		in intentional ingredient in the semiconductor d	ovice and to th				<u> </u>	Total		
emical substance, if any, is not below the threshold of regulat	ory concern for any re							Total	100.00	
mical substance, if any, is not below the threshold of regulat Iding compounds used by Microchip meet the UL94 V0 flamm p://ul.com/global/eng/pages/offerings/industries/chemicals/pl	nability standard for pla	gulatory scheme world-wide.	idable impurity	concentration	n of the	0.30	(mg) Total	Wire Bond	100.00 % of Total Weight	0.02
ding compounds used by Microchip meet the UL94 V0 flamm	nability standard for pla astics/	gulatory scheme world-wide. astics. You can access the UL iQTM family of da	idable impurity	concentration	n of the	0.30	(mg) Total  Doped Gold			0.02
Iding compounds used by Microchip meet the UL94 V0 flamm b://ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped	nability standard for pla astics/ are made from polyvin this form concerning s the best of its knowled s form because it has b rom disclosure as trade nates of the average w	gulatory scheme world-wide. astics. You can access the UL iQTM family of da yl chloride (PVC) plastic. "Window envelopes" u ubstances restricted by RoHS in Microchip Tecl ge and belief, as of the date listed in this form. I been compiled based on the ranges provided in e secrets and some information may not have be eight of these parts and the average weight of a	idable impurity tabases to obta used to hold the nnology Incorp Microchip Tech Material Safety een provided b nticipated sign	concentration ain a test repo e packing slip orated's semi nnology incorp Data Sheets   y subcontract ificant toxic m	n of the  on the outer  conductor  conductor  corated  provided by  assemblers  netals	0.30	1	Wire Bond	% of Total Weight	0.02
Iding compounds used by Microchip meet the UL94 V0 flamm c://ul.com/global/eng/pages/offerings/industries/chemicals/pl perotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in rices in their original packing materials is true and correct to into guarantee the completeness and accuracy of data in this material suppliers. Supplier information is often protected fir I raw material suppliers. Information is provided only as estin pronents. These estimates do not include trace levels of dop rochip Technology Incorporated does not provide any warra duct warranties provided by Microchip Technology Incorpora vided in Microchip's quotations, sales order acknowledgement vided in Microchip's quotations, sales order acknowledgement vided in Microchip's quotations, sales order acknowledgement vided in Microchip's quotations, sales order acknowledgement video video vid	nability standard for pla astics/ are made from polyvin this form concerning s the best of its knowled is form because it has b rom disclosure as trade mates of the average we bants, metals, and non- inty, express or implied ated and its subsidiarie ent, and invoices.	gulatory scheme world-wide. astics. You can access the UL iQTM family of da yl chloride (PVC) plastic. "Window envelopes" u ubstances restricted by RoHS in Microchip Tecl tige and belief, as of the date listed in this form. I seen compiled based on the ranges provided in e secrets and some information may not have be eight of these parts and the average weight of a metal materials contained within silicon devices II, with respect to the information provided in this are contained in Microchip's standard terms a	tabases to obtained to hold the same of the hold the same of the s	e packing slip orated's semi- nology Incorp Data Sheets y sub Sheets ificant toxic method for the finished purches of sale. These	n of the  rt at  on the outer  conductor  orated  provided by  assemblers  netals  arts.  limited  are	0.30	1	Wire Bond 7440-57-5	% of Total Weight	1.51
ding compounds used by Microchip meet the UL94 V0 flamm o://ul.com/global/eng/pages/offerings/industries/chemicals/pl e protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the information in rices in their original packing materials is true and correct to inot guarantee the completeness and accuracy of data in this ir material suppliers. Supplier information is often protected fit It aw material suppliers. Information is provided only as estin inponents. These estimates do not include trace levels of dop rochip Technology Incorporated does not provide any warra duct warranties provided by Microchip Technology Incorporated duct warranties provided by Microchip Technology Incorporated duct warranties provided by Microchip Technology Incorporated	nability standard for pla astics/ are made from polyvin this form concerning s the best of its knowled s form because it has b rom disclosure as trade mates of the average we bants, metals, and non- inty, express or implied ated and its subsidiarie ent, and invoices. ges to Material Contene busers' reliance on the	gulatory scheme world-wide. astics. You can access the UL iQTM family of da yl chloride (PVC) plastic. "Window envelopes" u ubstances restricted by RoHS in Microchip Tech Ige and belief, as of the date listed in this form. I een compiled based on the ranges provided in i e secrets and some information may not have be eight of these parts and the average weight of a metal materials contained within silicon devices I, with respect to the information provided in this es are contained in Microchip's standard terms a t Declarations and shall not be liable for any dar	tabases to obtained to hold the incology Incorp Microchip Tech Material Safety een provided benticipated sign is (silicon IC) in a second conditions mages, direct of tabases of tabases of the incologistic forms of the incologi	e concentration ain a test report per packing slip orated's semi- inology Incorp Data Sheets y subcontract ifficant toxic in the finished p The exclusive, of sale. These or indirect, cor	on of the  on the outer  conductor  conducto		Doped Gold	Wire Bond 7440-57-5 Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	% of Total Weight 100 100.00	

P 20 PDIP 10:09 AM : 5/6/2014

Semiconductor Device Type  Basic Substance Silica, vitreous Epoxy Resin (No bromine, No diantimony trioxide) Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Epoxy, Cresol Novolac Carbon Black Copper	CAS Number 60676-86-0	"Contained In"		Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Silica, vitreous Epoxy Resin (No bromine, No diantimony trioxide) Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Epoxy, Cresol Novolac Carbon Black Copper	60676-86-0		% Total		1			1		<u></u>
Silica, vitreous Epoxy Resin (No bromine, No diantimony trioxide) Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Epoxy, Cresol Novolac Carbon Black Copper	60676-86-0	Sub-Component	Weight	mg/part	ppm	1267.01	(mg) Total	Mold Compound	% ot Total Weight	68.46
Epoxy Resin (No bromine, No diantimony trioxide) Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Epoxy, Cresol Novolac Carbon Black Copper		Mold Compound	58.191	1076.958	581,910		Silica, vitreous	60676-86-0	85.00	
Epoxy, Cresol Novolac Carbon Black Copper	Trade Secret	Mold Compound	4.193	77.604	41,932		Epoxy Resin	Trade Secret	6.13	
Carbon Black Copper	Trade Secret	Mold Compound	4.193	77.604	41,932		Phenolic Resin	Trade Secret	6.13	
Copper	29690-82-2	Mold Compound	1.677	31.042	16,773		Epoxy, Cresol Novolac	29690-82-2	2.45	
	1333-86-4	Mold Compound	0.205	3.801	2,054		Carbon Black	1333-86-4	0.30	
	7440-50-8	Lead Frame	27.830	515.060	278,301			Total	100.00	
Iron	7439-89-6	Lead Frame	0.685	12.669	6,846	539.12	(mg) Total	Lead Frame	% of Total Weight	29.13
Silver	7440-22-4	Lead Frame	0.555	10.270	5,549		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.036	0.674	364		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.024	0.445	240		Silver	7440-22-4	1.91	i
Silver	7440-22-4	Die Attach	0.104	1.917	1,036		Zinc	7440-66-6	0.13	i
Epoxy resin	Trade Secret	Die Attach	0.032	0.596	322		Phosphorous	7723-14-0	0.08	i
Gamma-butyrolactone	96-48-0	Die Attach	0.004	0.078	42			Total	100.00	
Silicon	7440-21-3	Chip (Die)	0.750	13.880	7,500	2.59	(mg) Total	Die Attach	% of Total Weight	0.14
Gold	7440-57-5	Wire Bond	0.030	0.555	300		Silver	7440-22-4	74	i
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.490 <b>100.000</b>	27.576 <b>1.850.730</b>	14,900 <b>1.000.000</b>		Epoxy resin	Trade Secret	23	i
		TOTALS:	100.000	1,850.730	1,000,000		Gamma-butyrolactone	96-48-0 <b>Total</b>	100.00	j
semiconductor device and its homogenous materials comply w		Total Mass	Dalle Basset D	iroctivo) and w	ith Ell			Total	100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		, , ,		,		13.88	Total (mg)	Chip (Die)	% of Total Weight	0.75
npliance with the above EU Directives has been verified via inter	nal design controls,	supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	i
chemical substance is absent from the list above, the chemical substance is absent from the date of this document is, is not below the threshold of regulatory concern for any regula	t, there is no credible	reason to believe that the unavoidable impurity con						Total	100.00	
ding compounds used by Microchip meet the UL94 V0 flammabil p://ul.com/global/eng/pages/offerings/industries/chemicals/plastic		tics. You can access the UL iQTM family of database	es to obtain a to	est report at		0.56	(mg) Total	Wire Bond	% of Total Weight	0.03
protective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic.	made from polyvinyl	chloride (PVC) plastic. "Window envelopes" used to	hold the pack	ing slip on the	outer box		Doped Gold	7440-57-5	100	
								Total	100.00	i
rochip Technology Incorporated believes the information in this heir original packing materials is true and correct to the best of i completeness and accuracy of data in this form because it has t pplier information is often protected from disclosure as trade sec ormation is provided only as estimates of the average weight of t lude trace levels of dopants, metals, and non-metal materials cor	ts knowledge and be been compiled based rets and some information in the areas and some information.	lief, as of the date listed in this form. Microchip Tech on the ranges provided in Material Safety Data Shee nation may not have been provided by subcontract a verage weight of anticipated significant toxic metals	nnology Incorp ets provided by assemblers and	orated cannot raw material : I raw material	guarantee suppliers. suppliers.					
rochip Technology Incorporated does not provide any warranty, ranties provided by Microchip Technology Incorporated and its rochip's quotations, sales order acknowledgement, and invoices	subsidiaries are cont					27.58	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.49
rochip disclaims any duty to notify users of updates or changes erwise, 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	

PG 24 PDIP 10:09 AM : 5/6/2014

Semiconductor Device Type: P and PI 28 (Lead) PDIP (Wide Outline -600") (Q2 / QB)  "Contained In"  "Contained In"  "Contained In"				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	nnm	3245.23	(mg) Total	Mold Compound	% ot Total Weight	79.8	
Fused Silica	60676-86-0	Mold Compound	57.456	2336.563	<b>ppm</b> 574.560		Fused Silica	60676-86-0	72.00	1	
Metal Hydro Oxide	Trade Secret	Mold Compound	8,778	356.975	87.780		Metal Hydro Oxide	Trade Secret	11.00		
Epoxy Resin	Trade Secret	Mold Compound	5.586	227.166	55,860		Epoxy Resin	Trade Secret	7.00		
Phenol Resin	Trade Secret	Mold Compound	5.586	227.166	55,860		Phenol Resin	Trade Secret	7.00		
SiO2	14808-60-7	Mold Compound	1.995	81.131	19,950		SiO2	14808-60-7	2.50		
Carbon Black	1333-86-4 7440-50-8	Mold Compound	0.399 9.984	16.226	3,990		Carbon Black	1333-86-4	0.50	]	
Copper Iron	7439-89-6	Lead Frame Lead Frame	0.246	406.006 9.987	99,837 2,456	424.97	(\ T-4-1	Total	100.00	10.45	
Silver	7440-22-4	Lead Frame	0.199	8.096	1,991	424.97	(mg) Total Copper	Lead Frame 7440-50-8	% of Total Weight 95.54	10.45	
Zinc	7440-66-6	Lead Frame	0.013	0.531	131		Iron	7439-89-6	2.35		
Phosphorous	7723-14-0	Lead Frame	0.009	0.351	86		Silver	7440-22-4	1.91		
Polyimide	25038-81-7	Lead Frame	0.022	0.874	215		Zinc	7440-66-6	0.13		
Poly - ethylene – terephthalate	25038-59-9	Lead Frame	0.019	0.773	190		Phosphorous	7723-14-0	0.08		
NBR	9003-18-3	Lead Frame	0.004	0.142	35			Total	100.00	•	
Bismaleimide	79922-55-7	Lead Frame	0.003	0.122	30	2.03	(mg) Total	Lead Lock Tape	% of Total Weight	0.05	
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.122	30		Polyimide	25038-81-7	43.00		
Silver	7440-22-4	Die Attach	0.550	22.375	5,502		Poly - ethylene - terephthalate		38.00		
Epoxy Resin	9003-36-5	Die Attach	0.110	4.474	1,100		NBR	9003-18-3	7.00		
Diluent Phenolic hardener	3101-60-8 Trade secret	Die Attach Die Attach	0.055 0.022	2.236 0.894	550 220		Bismaleimide	79922-55-7	6.00		
Amine type hardener	827-43-0	Die Attach	0.022	0.694	110		Phenol resin	28453-20-5 / 9016-83-5 Total	6.00 <b>100.00</b>	]	
Dicyandiamide	461-58-5	Die Attach	0.002	0.073	18	30.50	(mg) Total	Die Attach	% of Total Weight	0.75	
Dicyandiamide	401 00 0	Die Attach	0.002	0.070	10	30.30	(ilig) rotal	Die Attach	/6 Of Total Weight	0.73	
Silicon	7440-21-3	Chip (Die)	7.500	305.003	75.000		Silver	7440-22-4	73		
Gold	7440-21-3	Wire Bond	0.200	8,133	2.000		Epoxy Resin	9003-36-5	15		
		Wile Bolla							10		
Tin	7440-31-5	Plating on external leads (nins) - Matte Tin / annealed at 150°C for 1 hour	1 250	50.834	12 500		Diluent	3101-60-8	7		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:	1.250 100.000	50.834 <b>4.066.700</b>	12,500 <b>1.000.000</b>		Bildoni	3101-60-8 Trade secret	7		
Tin	•	TOTALS:	1.250 <b>100.000</b>	50.834 <b>4,066.700</b>	12,500 1,000,000		Phenolic hardener	Trade secret	3		
is semiconductor device and its homogenous materials co	4.0667	TOTALS: g Total Mass	100.000	4,066.700	1,000,000		Phenolic hardener Amine type hardener	Trade secret 827-43-0	7 3 1		
is semiconductor device and its homogenous materials co rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	4.0667 mply with EU Directive 2002/95/E	TOTALS:  g Total Mass  C (RoHS Directive), EU Directive 2011/65/EU (RoHS	100.000	4,066.700	1,000,000		Phenolic hardener	Trade secret	3		
is semiconductor device and its homogenous materials co	4.0667 Imply with EU Directive 2002/95/E ia internal design controls, supplimical substance is NOT an intencument, there is no credible reas	TOTALS:  g Total Mass  EC (ROHS Directive), EU Directive 2011/65/EU (ROHS)  lier declarations, and /or analytical test data.  tional ingredient in the semiconductor device and,	100.000  Recast Director the best of	4,066.700 ctive) and wit	1,000,000 h EU echnology	305.00	Phenolic hardener Amine type hardener	Trade secret 827-43-0 461-58-5	3 1	7.5	
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P PI 28 PDIP 10:09 AM : 5/6/2014

Semiconductor Device Type: PHE 32 (Lead) PDIP (Wide Outline600") (P2)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Devi-	ce Type. THE 32 (Lead) TE	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	4478.48	(mg) Total	Mold Compound	% ot Total Weight	85.67
Silica, vitreous	60676-86-0	Mold Compound	72.820	3806.712	728,195		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.247	274.307	52,473		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	5.247	274.307	52,473		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac Carbon Black	29690-82-2	Mold Compound	2.099 0.257	109.723 13.435	20,989 2,570		Epoxy, Cresol Novolac	29690-82-2	2.45	
Copper	1333-86-4 7440-50-8	Mold Compound  Lead Frame	12.783	668,240	127.829		Carbon Black	1333-86-4 Total	0.30 <b>100.00</b>	
Iron	7440-50-6	Lead Frame	0.314	16.437	3,144	699.45	(mg) Total	Lead Frame		13.38
Silver	7440-22-4	Lead Frame	0.255	13.325	2.549	699.45		7440-50-8	% of Total Weight 95.54	13.38
Zinc	7440-22-4	Lead Frame Lead Frame	0.255	0.874	2,549		Copper	7440-50-8 7439-89-6	95.54 2.35	
Phosphorous	7723-14-0	Lead Frame	0.017	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	g 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	
				E 007 C00	1.000.000		0 (0)	7440-50-8	3.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	• •	EC (RoHS Directive), EU Directive 2011/65/EU (		5,227.600 Directive) and	,,	11.50	Copper ( Cu ) (mg) Total	Total Chip (Die)	100.00 % of Total Weight	0.22
s semiconductor device and its homogenous materials c active 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch	omply with EU Directive 2002/95/E via internal design controls, suppl emical substance is NOT an inten	otal Mass EC (RoHS Directive), EU Directive 2011/65/EU ( lier declarations, and /or analytical test data. ttional ingredient in the semiconductor device	RoHS Recast	Directive) and	with EU	11.50		Total	100.00	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 orporated's knowledge and belief as of the date of this do , is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 fis	omply with EU Directive 2002/95/E via internal design controls, suppl memical substance is NOT an inten scument, there is no credible reas y regulatory scheme world-wide. mmability standard for plastics. N	otal Mass  EC (RoHS Directive), EU Directive 2011/65/EU ( dier declarations, and /or analytical test data.  attional ingredient in the semiconductor device to to believe that the unavoidable impurity co	RoHS Recast and, to the be ncentration of	Directive) and est of Microchig	with EU p Technology substance, if	11.50	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	0.22
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified.	omply with EU Directive 2002/95/E via internal design controls, suppl emical substance is NOT an inten ocument, there is no credible reas y regulatory scheme world-wide. ammability standard for plastics. \ is/plastics/	Otal Mass EC (RoHS Directive), EU Directive 2011/65/EU ellier declarations, and /or analytical test data. Itional ingredient in the semiconductor device on to believe that the unavoidable impurity co	RoHS Recast and, to the be ncentration of	Directive) and est of Microchip the chemical stest report at	with EU p Technology substance, if		(mg) Total  Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
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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 che roporated's knowledge and belief as of the date of this do r, is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 fit. br/lul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipt certain "reels" may be made from PVC plastic.  rochip Technology Incorporated believes the information their original packing materials is true and correct to the lo completeness and accuracy of data in this form because piler information is often protected from disclosure as termation is provided only as estimates of the average we	omply with EU Directive 2002/95/E via internal design controls, suppl via internal design coredible reas v regulatory scheme world-wide. ammability standard for plastics. N s/plastics/ ped are made from polyvinyl chlor in in this form concerning substance best of its knowledge and belief, a via thas been compiled based on the rade secrets and some information ight of these parts and the averag rials contained within silicon devic arranty, express or implied, with r and its subsidiaries are contained	otal Mass  EC (RoHS Directive), EU Directive 2011/65/EU ( dier declarations, and /or analytical test data.  Itional ingredient in the semiconductor device ion to believe that the unavoidable impurity co  You can access the UL iQTM family of database  ride (PVC) plastic. "Window envelopes" used to  ces restricted by RoHS in Microchip Technolo  is of the date listed in this form. Microchip Tech  the ranges provided in Material Safety Data She  n may not have been provided by subcontract  the weight of anticipated significant toxic metals  ces (silicon IC) in the finished parts.  respect to the information provided in this dec-	RoHS Recast and, to the be ncentration of ses to obtain a to hold the pace gy Incorporate thnology Incor eets provided assemblers a s components laration. The e	Directive) and est of Microchi the chemical a test report at cking slip on the ed's semicondi- porated canno by raw materia nd raw materia . These estima exclusive, limit	with EU  p Technology substance, if  ne outer box  uctor devices ot guarantee al suppliers. al suppliers. ates do not  ed 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	
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 che roporated's knowledge and belief as of the date of this de 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 ship certain "reels" may be made from PVC plastic.  rochip Technology Incorporated believes the information neir original packing materials is true and correct to the completeness and accuracy of data in this form because piller information is often protected from disclosure as termation 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 we ranties provided by Microchip Technology Incorporated	omply with EU Directive 2002/95/E via internal design controls, suppl semical substance is NOT an inten occument, there is no credible reas y regulatory scheme world-wide. ammability standard for plastics. \( \) is/plastics/ ped are made from polyvinyl chlor in this form concerning substances to fits knowledge and belief, a it has been compiled based on the rade secrets and some information ight of these parts and the averag rials contained within sillicon device arranty, express or implied, with ra and its subsidiaries are contained invoices.  changes to Material Content Declar he users' reliance on the information	otal Mass EC (RoHS Directive), EU Directive 2011/65/EU of RoHS Directive, and /or analytical test data. Intional ingredient in the semiconductor device on to believe that the unavoidable impurity control of the control	and, to the be neentration of ses to obtain a so hold the pace of set provided assemblers a somponents diaration. The essential of sets and the sets of sale. These sets, direct or incompared the sets of sale.	Directive) and est of Microchin the chemical test report at cking slip on the ed's semicond reporated cannot by raw materia These estima exclusive, limit is are provided	with EU p Technology substance, if ne outer box uctor devices of guarantee al suppliers. al suppliers. al suppliers. teed product d in	1.57	(mg) Total  Doped Silicon  (mg) Total  Doped 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	0.03

PHE 32 PDIP 10:10 AM : 5/6/2014

ICROCHIP Semiconductor Device T	Vine. B and BI 40/1 and BD	IP (Wide Outline600") (\$2 / \$L)		nation Base A pper Alloy (Ci			•	geneous Materials: <sub>I</sub> . pc boards, displays	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device 1	ype. Fand FL 40 (Lead) FD	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	5187.00	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	3734.640	574,560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	570.570	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin Phenol Resin	Trade Secret Trade Secret	Mold Compound  Mold Compound	5.586 5.586	363.090 363.090	55,860 55,860		Epoxy Resin Phenol Resin	Trade Secret Trade Secret	7.00 7.00	
SiO2	14808-60-7	Mold Compound	1.995	129,675	19.950		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.399	25.935	3,990		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	9.984	648.938	99,837			Total	100.00	!
Iron	7439-89-6	Lead Frame	0.246	15.962	2,456	679.25	(mg) Total	Lead Frame	% of Total Weight	10.45
Silver	7440-22-4	Lead Frame	0.199	12.940	1,991		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.849	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.560	86		Silver	7440-22-4	1.91 0.13	
Polyimide Poly - ethylene – terephthalate	25038-81-7 25038-59-9	Lead Frame Lead Frame	0.022 0.019	1.398 1.235	215 190		Zinc Phosphorous	7440-66-6 7723-14-0	0.13	
NBR	9003-18-3	Lead Frame	0.019	0.228	35	,	т поэрногова	Total	100.00	l
Bismaleimide	79922-55-7	Lead Frame	0.003	0.195	30	3.25	(mg) Total	Lead Lock Tape	% of Total Weight	0.05
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.195	30		Polyimide	25038-81-7	43.00	5.00
Silver	7440-22-4	Die Attach	0.550	35.763	5,502		Poly - ethylene - terephthalate	25038-59-9	38.00	
Epoxy Resin	9003-36-5	Die Attach	0.110	7.152	1,100		NBR	9003-18-3	7.00	
Diluent	3101-60-8	Die Attach	0.055	3.573	550		Bismaleimide	79922-55-7	6.00	
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			Total	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	
Gold	7440-57-5	Wire Bond	0.200	13.000	2.000		Epoxy Resin	9003-36-5	15	
		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour								
Tin			1.250	81.250	12.500		Diluent	3101-60-8	7	
Tin	7440-31-3	TOTALS:	1.250 <b>100.000</b>	81.250 <b>6,500.000</b>	12,500 <b>1,000,000</b>		Diluent Phenolic hardener	3101-60-8 Trade secret	3	
TIN		TOTALS:						Trade secret		
	6.5000 g		100.000	6,500.000	1,000,000		Phenolic hardener Amine type hardener	Trade secret 827-43-0	3	
semiconductor device and its homogenous EU Directive 2002/53/EC (End-of-Life Vehic	6.5000 c materials comply with EU Directies (ELV) Directive).	TOTALS:	100.000 011/65/EU (Rol	6,500.000	1,000,000		Phenolic hardener	Trade secret	3	
semiconductor device and its homogenous EU Directive 2002/53/EC (End-of-Life Vehic pliance with the above EU Directives has behemical substance is absent from the list a nology Incorporated's knowledge and belichical substance, if any, is not below the three	6.5000 g materials comply with EU Directives (ELV) Directive). sen verified via internal design cobove, the chemical substance is If as of the date of this document, shold of regulatory concern for a	TOTALS:  TOTAL TOTALS:  TOTAL TOTALS:  TOTAL TOTALS:  TOTAL TOTALS:  TOTALS	100.000 011/65/EU (Rol- test data. ctor device and unavoidable im	6,500.000  HS Recast Directly to the best of appurity concent	1,000,000 ctive) and Microchip ration of the	487.50	Phenolic hardener Amine type hardener	Trade secret 827-43-0 461-58-5	3 1 0	7.5
semiconductor device and its homogenous EU Directive 2002/53/EC (End-of-Life Vehic pliance with the above EU Directives has be hemical substance is absent from the list a nology Incorporated's knowledge and belie nical substance, if any, is not below the threing compounds used by Microchip meet the	6.5000 g materials comply with EU Directi les (ELV) Directive). een verified via internal design co bove, the chemical substance is I if as of the date of this document, eshold of regulatory concern for a	TOTALS:  G Total Mass ive 2002/95/EC (RoHS Directive), EU Directive 20 introls, supplier declarations, and /or analytical introls, and intentional ingredient in the semiconduc, there is no credible reason to believe that the	100.000 011/65/EU (Rol- test data. ctor device and unavoidable im	6,500.000  HS Recast Directly to the best of appurity concent	1,000,000 ctive) and Microchip ration of the	487.50	Phenolic hardener Amine type hardener Dicyandiamide	Trade secret 827-43-0 461-58-5 Total	0 100.00	7.5
semiconductor device and its homogenous EU Directive 2002/53/EC (End-of-Life Vehic pliance with the above EU Directives has be chemical substance is absent from the list a nology Incorporated's knowledge and belic mical substance, if any, is not below the threating compounds used by Microchip meet the //ul.com/global/eng/pages/offerings/industr	6.5000 g materials comply with EU Directives les (ELV) Directive). sen verified via internal design co bove, the chemical substance is I if as of the date of this document, schold of regulatory concern for a se UL94 V0 flammability standard f ies/chemicals/plastics/ duct is shipped are made from po	TOTALS:  TOTAL TOTALS:  TOTAL TOTALS:  TOTAL TOTALS:  TOTAL TOTALS:  TOTALS	100.000 011/65/EU (Rol test data. ctor device and unavoidable im of databases t	d, to the best of the obtain a test	1,000,000  ctive) and  Microchip ration of the	487.50	Phenolic hardener Amine type hardener Dicyandiamide  Total (mg)	Trade secret 827-43-0 461-58-5  Total  Chip (Die)	3 1 0 100.00	7.5
semiconductor device and its homogenous EU Directive 2002/53/EC (End-of-Life Vehic pliance with the above EU Directives has be themical substance is absent from the list a nology Incorporated's knowledge and belie nical substance, if any, is not below the threating compounds used by Microchip meet the tiling compounds in which the specific proof in the properties of the tiling compounds and the tiling compounds and the tiling compounds the tiling compounds the tiling compounds and the tiling compounds the tiling	6.5000 g materials comply with EU Directive). en verified via internal design co bove, the chemical substance is I if as of the date of this document, eshold of regulatory concern for a e UL94 V0 flammability standard f ies/chemicals/plastics/ duct is shipped are made from po n PVC plastic. e information in this form concern materials is true and correct to the completeness and accuracy of di optilers. Supplier information is of aterial suppliers. Information is of	TOTALS:  TOTAL TOTALS:  TOTAL TOTALS:  TOTAL TOTALS:  TOTAL TOTALS:  TOTALS	100.000  011/65/EU (Role test data.  ctor device and unavoidable im  of databases to be precipitation of test din this assed on the rail and some infort of these parts	d, to the best of appurity concent to obtain a test old the packing incorporated's form. Microchinges provided mation may no, and the avera, and the avera,	1,000,000  ctive) and  Microchip ration of the  report at g slip on the  ip in Material t have been ge weight of	487.50	Phenolic hardener Amine type hardener Dicyandiamide  Total (mg)	Trade secret 827-43-0 461-58-5  Total  Chip (Die) 7440-21-3	3 1 0 100.00 % of Total Weight	7.5
semiconductor device and its homogenous EU Directive 2002/53/EC (End-of-Life Vehicipliance with the above EU Directives has be chemical substance is absent from the list a nology incorporated's knowledge and belie mical substance, if any, is not below the threating compounds used by Microchip meet the //ul.com/global/eng/pages/offerings/industrictive "tubes" in which the specific prorionand certain "reels" may be made from ochip Technology incorporated believes the iconductor devices in their original packing nology incorporated cannot guarantee the try Data Sheets provided by raw material sujuided by subcontract assemblers and raw mighated significant toxic metals components on IC) in the finished parts.	a materials comply with EU Directive).  seen verified via internal design co- bove, the chemical substance is I if as of the date of this document, eshold of regulatory concern for a is UL94 V0 flammability standard fi ies/chemicals/plastics/ duct is shipped are made from pon in PVC plastic. information in this form concern materials is true and correct to the completeness and accuracy of di opliers. Supplier information is of aterial suppliers. Information is of aterial suppliers. Information is pon include ovide any warranty, express or in nology incorporated and its subsi	TOTALS:  TOTALS  TOTALS	100.000 011/65/EU (Rol test data. ctor device and unavoidable im of databases to pes" used to he p Technology I te listed in this ased on the rai and some infor of these parts materials conta in this declara	d, to the best of appurity concent to obtain a test old the packing encorporated's form. Microchinges provided mation may not and the avera ained within silitton. The exclution	1,000,000  ctive) and  Microchip ration of the report at g slip on the ip in Material at have been ge weight of icon devices sive, limited		Phenolic hardener Amine type hardener Dicyandiamide  Total (mg)  Doped Silicon	Trade secret 827-43-0 461-58-5  Total  Chip (Die)  7440-21-3  Total  Wire Bond	3 1 0 100.00 % of Total Weight 100	
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semiconductor device and its homogenous EU Directive 2002/53/EC (End-of-Life Vehicipliance with the above EU Directives has bethemical substance is absent from the list a nology Incorporated's knowledge and belie inical substance, if any, is not below the threat ling compounds used by Microchip meet the first in the substance, if any, is not below the threat ling compounds used by Microchip meet the first in the substance, if any, is not below the threat ling compounds used by Microchip meet the first in the substance in the specific proof to and certain "reels" may be made from oochip Technology Incorporated believes the conductor devices in their original packing incology Incorporated dearnot guarantee the ty Data Sheets provided by raw material substance in the substance of the substance of the substance in the finished parts.  Ochip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology Incorporated does not product warranties provided by Microchip Technology In	a materials comply with EU Directives (ELV) Directive).  seen verified via internal design cobove, the chemical substance is If as of the date of this document, schold of regulatory concern for a see UL94 V0 flammability standard fies/chemicals/plastics/ duct is shipped are made from por PVC plastic.  Information in this form concern materials is true and correct to the completeness and accuracy of displiers. Supplier information is of atterial suppliers. Information is of atterial suppliers. Information is possible information is possible information in the concept ovide any warranty, express or incology incorporated and its subsiance when the concept in th	TOTALS:  TOTALS  T	100.000 011/65/EU (Rol test data. ctor device and unavoidable im of databases to pes" used to he p Technology I te listed in this ased on the rai and some infor of these parts materials conta- in this declara erms and cond ny damages, di	d, to the best of purity concent to obtain a test old the packing ncorporated's form. Microchinges provided mation may nc and the avera ained within silition. The exclutions of sale. The provide of the concentration of	1,000,000 ctive) and  i Microchip ration of the report at g slip on the in Material t have been ge weight of icon devices tsive, limited These are t,		Phenolic hardener Amine type hardener Dicyandiamide  Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (mg) Total	Trade secret 827-43-0 461-58-5  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	3 1 0 100.00 % of Total Weight 100 400.00 % of Total Weight 100 100.00	
semiconductor device and its homogenous EU Directive 2002/53/EC (End-of-Life Vehicipliance with the above EU Directives has bethemical substance is absent from the list a mology incorporated's knowledge and belie inical substance, if any, is not below the three ling compounds used by Microchip meet the fluid compounds used by Microchip and the specific prore to and certain "reels" may be made from the foother of the fluid process in their original packing incology incorporated believes the foother of the fluid provided by raw material sugited by subcontract assemblers and raw mipated significant toxic metals components on IC) in the finished parts.  Occhip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not pruct warranties provided by Microchip Technology Incorporated does not provided by Microchip Technology Inco	a materials comply with EU Directives (ELV) Directive).  seen verified via internal design cobove, the chemical substance is If as of the date of this document, schold of regulatory concern for a see UL94 V0 flammability standard fies/chemicals/plastics/ duct is shipped are made from por PVC plastic.  Information in this form concern materials is true and correct to the completeness and accuracy of displiers. Supplier information is of atterial suppliers. Information is of atterial suppliers. Information is possible information is possible information in the concept ovide any warranty, express or incology incorporated and its subsiance when the concept in th	TOTALS:  TOTALS  T	100.000 011/65/EU (Rol test data. ctor device and unavoidable im of databases to pes" used to he p Technology I te listed in this ased on the rai and some infor of these parts materials conta- in this declara erms and cond ny damages, di	d, to the best of purity concent to obtain a test old the packing ncorporated's form. Microchinges provided mation may nc and the avera ained within silition. The exclutions of sale. The provide of the concentration of	1,000,000 ctive) and  i Microchip ration of the report at g slip on the in Material t have been ge weight of icon devices tsive, limited These are t,	13.00	Phenolic hardener Amine type hardener Dicyandiamide  Total (mg)  Doped Silicon  (mg) Total  Doped Gold	Trade secret 827-43-0 461-58-5  Total  Chip (Die) 7440-21-3  Total  Wire Bond  7440-57-5  Total	3 1 0 100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2

P PL 28 PDIP 10:10 AM : 5/6/2014

Semiconductor Device	Type: SP 28 (Lead) SPDIP	300" (M3 / MD)		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	1665.83	(mg) Total	Mold Compound	% ot Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	1199,394	574.560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	183,241	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	116.608	55,860		Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.586	116.608	55,860		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.995	41.646	19,950		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4 7440-50-8	Mold Compound Lead Frame	0.399 9.984	8.329 208.409	3,990 99,837		Carbon Black	1333-86-4	0.50	
Copper Iron	7440-50-8	Lead Frame Lead Frame	0.246	5.126	2,456	040.44	( )=(1	Total		10.15
Silver	7439-69-6	Lead Frame	0.246	4.156	1,991	218.14	(mg) Total Copper	Lead Frame 7440-50-8	% of Total Weight 95.54	10.45
Zinc	7440-66-6	Lead Frame	0.013	0.273	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.180	86		Silver	7440-22-4	1.91	
Polyimide	25038-81-7	Lead Frame	0.022	0.449	215		Zinc	7440-66-6	0.13	
Poly - ethylene – terephthalate	25038-59-9	Lead Frame	0.019	0.397	190		Phosphorous	7723-14-0	0.08	
NBR	9003-18-3	Lead Frame	0.004	0.073	35	1		Total	100.00	
Bismaleimide	79922-55-7	Lead Frame	0.003	0.063	30	1.04	(mg) Total	Lead Lock Tape	% of Total Weight	0.05
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.063	30		Polyimide	25038-81-7	43.00	
Silver	7440-22-4	Die Attach	0.550	11.485	5,502		Poly - ethylene - terephthalate		38.00	
Epoxy Resin	9003-36-5	Die Attach	0.110	2.297	1,100		NBR	9003-18-3	7.00	
Diluent	3101-60-8	Die Attach	0.055	1.148	550		Bismaleimide	79922-55-7	6.00	
Phenolic hardener	Trade secret 827-43-0	Die Attach Die Attach	0.022	0.459	220 110		Phenol resin	28453-20-5 / 9016-83-5 Total	6.00 <b>100.00</b>	
Amine type hardener Dicyandiamide	461-58-5	Die Attach	0.002	0.230	18	15.66	(mg) Total	Die Attach	% of Total Weight	0.75
Dicyandiamide	401-38-3	Die Attach	0.002	0.036	10	15.00	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	156.563	75,000		Silver	7440-22-4	73	
Gold	7440-57-5	Wire Bond	0.200	4.175	2,000		Epoxy Resin	9003-36-5	15	
Tin	7440-31-5 Plating	g on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	26.094	12,500		Diluent	3101-60-8	7	
		TOTALS:					Bildonk	0101 00 0		
			100.000	2,087.500	1,000,000		Phenolic hardener	Trade secret	3	
	2.0875 g 1		100.000	2,087.500			Phenolic hardener Amine type hardener	0101 00 0		
is semiconductor device and its homogenous materials of		Total Mass		,	1,000,000		Amine type hardener	Trade secret	3	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2002/95/EC (	Fotal Mass RoHS Directive), EU Directive 2011/65/EU (Re		,	1,000,000			Trade secret 827-43-0	3	
	comply with EU Directive 2002/95/EC (i via internal design controls, supplier memical substance is NOT an intention ocument, there is no credible reason t	Total Mass  ROHS Directive), EU Directive 2011/65/EU (Ro  declarations, and /or analytical test data.  al ingredient in the semiconductor device ar	oHS Recast Dir	rective) and wi	1,000,000 th EU	156.56	Amine type hardener	Trade secret 827-43-0 461-58-5	3 1	7.5
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 y, is not below the threshold of regulatory concern for an Idding compounds used by Microchip meet the UL94 V0 f	comply with EU Directive 2002/95/EC (in via internal design controls, supplier onemical substance is NOT an intention ocument, there is no credible reason to by regulatory scheme world-wide.	Fotal Mass  RoHS Directive), EU Directive 2011/65/EU (Ro  declarations, and /or analytical test data.  al ingredient in the semiconductor device are  o believe that the unavoidable impurity cond	oHS Recast Dir nd, to the best centration of th	rective) and wi of Microchip T e chemical sul	1,000,000 th EU	156.56	Amine type hardener Dicyandiamide	Trade secret 827-43-0 461-58-5	0 100.00	7.5
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 croprorated's knowledge and belief as of the date of this d ,, is not below the threshold of regulatory concern for an idding compounds used by Microchip meet the UL94 V0 fip://ul.com/global/eng/pages/offerings/industries/chemica	comply with EU Directive 2002/95/EC (ivia internal design controls, supplier onemical substance is NOT an intention ocument, there is no credible reason to by regulatory scheme world-wide. Iammability standard for plastics. You als/plastics/	Fotal Mass ROHS Directive), EU Directive 2011/65/EU (Rodeclarations, and /or analytical test data.  al ingredient in the semiconductor device are obelieve that the unavoidable impurity conductor access the UL iQTM family of databases.	oHS Recast Dir nd, to the best centration of th s to obtain a te	rective) and wi of Microchip T ee chemical sul st report at	1,000,000 th EU echnology bstance, if	156.56	Amine type hardener Dicyandiamide  Total (mg)	Trade secret 827-43-0 461-58-5 Total Chip (Die)	3 1 0 100.00 % of Total Weight	7.5
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 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 d certain "reels" may be made from PVC plastic.	via internal design controls, supplier via internal design controls, supplier nemical substance is NOT an intention ocument, there is no credible reason try regulatory scheme world-wide.  Iammability standard for plastics. You als/plastics/	Fotal Mass ROHS Directive), EU Directive 2011/65/EU (Rodeclarations, and /or analytical test data.  al ingredient in the semiconductor device are obelieve that the unavoidable impurity concan access the UL iQTM family of databases (PVC) plastic. "Window envelopes" used to	oHS Recast Dir nd, to the best centration of th s to obtain a te hold the packi	rective) and wi of Microchip T he chemical sul st report at ng slip on the	1,000,000 th EU echnology bstance, if	156.56	Amine type hardener Dicyandiamide  Total (mg)	Trade secret 827-43-0 461-58-5 Total Chip (Die) 7440-21-3	3 1 0 100.00 % of Total Weight	7.5
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SP 28 SPDIP 10:10 AM : 5/6/2014

MICROCHIP  Semiconductor Device Typ	e· 1 28 (Lead) P	LCC (L4)		nation Base A	. ,			nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Connectination Device Typ	J 20 (Ecau) 1	"Contained In"	% Lotal	1	1			ı		
Basic Substance	CAS Number	Sub-Component	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	
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		Copper	7440-50-8	97.99	
Manganese	7439-96-5	Lead Frame	0.001	0.015	13		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.163	1.860	1,628		Zirconium	7440-67-7	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			Total	100.00	
Silicon	7440-21-3	Chip (Die)	1.210	13.825	12,100	2.51	(mg) Total	Die Attach	% of Total Weight	0.22
Gold	7440-57-5	Wire Bond	0.070	0.800	700		Silver	7440-22-4	74	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.240	14.167	12,400		Epoxy resin	Trade Secret	23	
		TOTALS:	100.000	1,142.530	1,000,000		Gamma-butyrolactone	96-48-0	3	
	4 4 4 4 5 5								100.00	
s semiconductor device and its homogenous materials comply		g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	tive) and with	EU			Total	100.00	
s semiconductor device and its homogenous materials comply ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via int	with EU Directive 20	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direc	ctive) and with	EU	13.82	Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3	% of Total Weight	1.21
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 20 ernal design controls Il substance is NOT a ent, there is no credit	DOZ/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 conce	, to the best of	Microchip Ted	chnology	13.82		Chip (Die)	% of Total Weight	1.21
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance 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	with EU Directive 20 ernal design controls of substance is NOT a ent, there is no credit latory scheme world bility standard for pl	DO2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rohs, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concerwide.	, to the best of ntration of the	Microchip Tec	chnology	0.80		Chip (Die) 7440-21-3	% of Total Weight	0.07
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance 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  t, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 VO flamma	with EU Directive 20 ernal design controls I substance is NOT a ent, there is no credit latory scheme world bility standard for pl stics/	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rohs, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conceivide.  astics. You can access the UL iQTM family of databases to	, to the best of ntration of the o obtain a test	Microchip Tec chemical subs report at	chnology stance, if		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
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ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance 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 r, is not below the threshold of regulatory concern for any regu Idding compounds used by Microchip meet the UL94 V0 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plas e protective "tubes" in which the specific product is shipped at tain "reels" may be made from PVC plastic.  procchip Technology Incorporated believes the information in the 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 ovided only as estimates of the average weight of these parts a	with EU Directive 20 ernal design control: all substance is NOT a ent, there is no credit latory scheme world bility standard for pl stics/ e made from polyvin is form concerning s s knowledge and bel en compiled based o d some information at the average weigi on devices (silicon I y, express or implied	202/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), EU Directive 2011/65/EU (RoHS s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conceivide.  In astics. You can access the UL IQTM family of databases to a conceive declaration of the conceive data access the UL IQTM family of databases to a conceive declaration of the conceive data access the UL IQTM family of databases to a conceive declaration of the conceive data access the UL IQTM family of databases to a conceive declaration of the conceive database to the conceive database of the date listed in this form. Microchip Technology In the range provided in Material Safety Data Sheets promay not have been provided by subcontract assemblers in to famicipated significant toxic metals components. The C) in the finished parts.	to the best of ontration of the oobtain a test old the packing incorporated's tyled by raw mand raw materise estimates doion. The exclusion of the control o	Microchip Techemical substreport at slip on the outline semiconductor deannot guaraterial suppliers. It o not include	chnology stance, if uter box and r devices in intee the ers. Supplier iformation is trace levels		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	
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L 28 PLCC 10:10 AM : 5/6/2014

AICROCHIP  Semiconductor Device Typ	ne: NHE 32 (Lead	) PLCC (P3)		nation Base A				geneous Materials: g. pc boards, displays	)	JEDEC 97 Produ Marking and/o Pkg. Labeling e3
Commodituation Devices Type		"Contained In"	% Total		1					
Basic Substance	CAS Number	Sub-Component	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) Silver (Ag)	7440-22-4 7440-22-4	Lead Frame Die Attach	0.576	6.503 0.723	5,760 640		Silicon (Si)	7440-21-3 7439-95-4	1.00	
Silver (Ag) Epoxy Resin	Trade Secret	Die Attach	0.064	0.723	136		Magnesium ( Mg )	7439-95-4 7440-22-4	0.20 1.80	
Copper ( Cu )	7440-50-8	Die Attach	0.002	0.134	24		Silver (Ag)	Total	100.00	
Silicon	7440-50-8	Chip (Die)	4.820	54.418	48,200	2.22	() T.(.)			
Gold	7440-21-3	Wire Bond	0.100	1.129	1.000	0.90	(mg) Total	Die Attach	% of Total Weight	0.08
Gold Tin			3.000	33.870	30.000		Silver (Ag)	7440-22-4	80 17	
III	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:	100.000	1.129.000	1.000.000		Epoxy Resin Copper ( Cu )	Trade Secret 7440-50-8	3	
		Total Mass	100.000	1,129.000	1,000,000		Copper ( Cu )	7440-50-8	100.00	
	with EU Directive 2002	2/95/EC (RoHS Directive), EU Directive 2011/65/E	U (RoHS Recas	st Directive) ar	nd with EU	54.42	Total (mg)	Chip (Die)	% of Total Weight	4.82
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		,	•	st Directive) ar	nd with EU	54.42	Total (mg)  Doped Silicon	7440-21-3	100	4.82
semiconductor device and its homogenous materials comply ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Ipliance with the above EU Directives has been verified via intesting the substance is absent from the list above, the chemical substance is knowledge and belief as of the date of inical substance, if any, is not below the threshold of regulator.	ernal design controls, s substance is NOT an this document, there is	supplier declarations, and /or analytical test data intentional ingredient in the semiconductor devi s no credible reason to believe that the unavoida	ce and, to the l	pest of Microc	hip	54.42				4.82
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via interplied in the chemical substance is absent from the list above, the chemical anology Incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulator ling compounds used by Microchip meet the UL94 V0 flammate.	ernal design controls, substance is NOT an this document, there is y concern for any regulative standard for plast	supplier declarations, and /or analytical test data intentional ingredient in the semiconductor devises no credible reason to believe that the unavoidal alatory scheme world-wide.	e and, to the l	pest of Microc ncentration of	hip f the	1.13		7440-21-3	100	0.1
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via interchemical substance is absent from the list above, the chemical anology Incorporated's knowledge and belief as of the date of nical substance, if any, is not below the threshold of regulator ling compounds used by Microchip meet the UL94 V0 flammat //ul.com/global/eng/pages/offerings/industries/chemicals/plasiprotective "tubes" in which the specific product is shipped and	ernal design controls, is substance is NOT an this document, there is y concern for any regulative standard for plastics/	supplier declarations, and /or analytical test data intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidal alatory scheme world-wide.	ce and, to the lible impurity co	pest of Microconcentration of	hip f the at	· ·	Doped Silicon	7440-21-3 Total	100	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  upliance with the above EU Directives has been verified via intechemical substance is absent from the list above, the chemical anology incorporated's knowledge and belief as of the date of	ernal design controls, substance is NOT an this document, there is y concern for any regulative standard for plastics/ e made from polyvinyles form concerning subseques it has been compiculosure as trade secret from the average weight confirmed and the conficulty of the average weight confirmed as the confirmed area of the average weight confirmed area of the average weight confirmed average w	supplier declarations, and /or analytical test data intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidal alatory scheme world-wide.  tics. You can access the UL IQTM family of datable chloride (PVC) plastic. "Window envelopes" use estances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Microiled based on the ranges provided in Material Salets and some information may not have been proof these parts and the average weight of anticipat	ce and, to the I color impurity co cases to obtain d to hold the p logy Incorpora rochip Techno fety Data Shee vided by subc ed significant	pest of Microconcentration of a test report a acking slip on ated's semicorology Incorports provided by ontract assem toxic metals c	the outer  at the outer  aductor ated cannot y raw blers and	· ·	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).  Inpliance with the above EU Directives has been verified via interpretation of the date of including interpretations of the date of including incorporated's knowledge and belief as of the date of inical substance, if any, is not below the threshold of regulator ding compounds used by Microchip meet the UL94 V0 flammat influence of inical substance, if any, is not below the threshold of regulator ding compounds used by Microchip meet the UL94 V0 flammat influence of inical substance, if any, is not below the threshold of regulator ding compounds used by Microchip meet the UL94 V0 flammat influence in the specific product is shipped and and certain "reels" may be made from PVC plastic.  Ochip Technology Incorporated believes the information in this ces in their original packing materials is true and correct to the antee the completeness and accuracy of data in this form becomical suppliers. Supplier information is often protected from dismaterial suppliers. Information is provided only as estimates of the provided only as the provided only as estimates of the provided only as the provided	substance is NOT an this document, there is y concern for any regulative standard for plastics/ e made from polyvinyl is form concerning subside best of its knowledge ause it has been compiclosure as trade secret from the average weight of non-metal materials or, express or implied, viewbisidiaries are controlled.	supplier declarations, and /or analytical test data intentional ingredient in the semiconductor devices no credible reason to believe that the unavoidal alatory scheme world-wide.  tics. You can access the UL iQTM family of datable chloride (PVC) plastic. "Window envelopes" use estances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Microiled based on the ranges provided in Material Sates and some information may not have been profit these parts and the average weight of anticipat contained within silicon devices (silicon IC) in the with respect to the information provided in this divided.	ce and, to the lobe impurity co cases to obtain d to hold the p logy incorpora rochip Techno fety Data Shee vided by subc ed significant e finished part	pest of Microconcentration of a test report a acking slip on ated's semicorology Incorpor tes provided by ontract assem toxic metals c s.	the outer the outer adductor ated cannot y raw blers and omponents.	· ·	Doped Silicon  (mg) Total  Doped Gold	7440-21-3  Total  Wire Bond  7440-57-5	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 via interchemical substance is absent from the list above, the chemical anology Incorporated's knowledge and belief as of the date of inical substance, if any, is not below the threshold of regulator ding compounds used by Microchip meet the UL94 V0 flammat wil/ul.com/global/eng/pages/offerings/industries/chemicals/plasi protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.  ochip Technology Incorporated believes the information in this ces in their original packing materials is true and correct to the antee the completeness and accuracy of data in this form becerial suppliers. Supplier information is often protected from dismaterial suppliers. Information is provided only as estimates do se estimates do not include trace levels of dopants, metals, an ochip Technology Incorporated does not provide any warranty anties provided by Microchip Technology Incorporated and its	substance is NOT an this document, there is y concern for any regulative standard for plastics/ e made from polyvinyl is form concerning subside best of its knowledge ause it has been compictosure as trade secret the average weight of non-metal materials results in the subsidiaries are contest. It is subsidiaries are contest. It is to Material Content It is so Material Content It is reliance on the info	supplier declarations, and /or analytical test data intentional ingredient in the semiconductor devis no credible reason to believe that the unavoidal alatory scheme world-wide.  tics. You can access the UL iQTM family of datable chloride (PVC) plastic. "Window envelopes" use asstances restricted by RoHS in Microchip Technole and belief, as of the date listed in this form. Microiled based on the ranges provided in Material Sates and some information may not have been proof these parts and the average weight of anticipat contained within silicon devices (silicon IC) in the with respect to the information provided in this dained in Microchip's standard terms and condition declarations and shall not be liable for any damage.	ce and, to the legisles impurity consess to obtain do not the plogy Incorporation Technic fety Data Sheevided by subced significant e finished part eclaration. The ons of sale. The ges, direct or in the plant of t	a test report a acking slip on atted's semicor ology incorpor- its provided by ontract assem toxic metals c s.	hip f the  at the outer  inductor added cannot y raw blers and omponents.  hited product ed in  quential or	1.13	Doped 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	100 100.00 100.00 100.00 100.00	0.1

NHE 32 PLCC 10:11 AM: 5/6/2014

Semiconductor Device Type: L & NUE	MICROCHIP				nation Base A pper Alloy (C	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Markin and/or Pkg. Labeling
Basic Substance	Semiconductor Device Type	e: L & NJE 44 (Le	ead) PLCC (T2/TC)								e3
Balac Substance (CAS window) Substance (CAS w			"Contained In"	% Total							
Epoxy Reain No Izonom, No distallmony modely Phenoic Reain (No Izonom, No distallmony model) Phenoic Reain (No Izonom, No distallmony model) Phenoic Reain (No Izonom, No distallmony model) Phenoic Reain (No Izonom, No Iz	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1807.79	(mg) Total	Mold Compound	% ot Total Weight	76.1
## Phenoic Result No. BY C. (S. 1902). No distantioney traced (C. 1902) and the Compound (C. 1902) and	Silica, vitreous	60676-86-0	Mold Compound	64.685	1536.618	646,850		Silica, vitreous	60676-86-0	85.00	
Epocy, Circle Nevolace   2690-962/2   Mold Compound   1,894   44/281   18,645   44/281   14		Trade Secret		4.661	110.727	46,611		Epoxy Resin	Trade Secret	6.13	
Cation Black  Copper   7440556   Land Finime   21.60   50.735   21.458   1.508											
Copper   7440-598   Lead Frame   21.469  550.788   214.938   21.9   21.9   20.00   21.9   21.0   21.											
Silver   7440-22-4   Lead Frame   0.417   9.911   4,172   59.24   (mg) Total   Lead Frame   0.027   1.028   1.								Carbon Black			
According   1440-677   Least Frame   0.022   0.520   219   Size   7440-59-8   97.99											
Mininganese 7439-96-5 Lead Frame 0.001 0.026 11 Sever 1740-92-4 De Attach 0.104 2.46t 1.036 2 Epoy resin 17ade Secret De Attach 0.032 0.765 22 Epoy resin 17ade Secret De Attach 0.032 0.765 52 2 Epoy resin 17ade Secret De Attach 0.032 0.765 52 2 Epoy resin 17ade Secret De Attach 0.032 0.765 52 2 Epoy resin 17ade Secret De Attach 0.032 0.765 52 2 Epoy resin 17ade Secret De Attach 0.032 0.765 52 2 Epoy resin 17ade Secret De Attach 0.032 0.765 52 2 Epoy resin 17ade Secret De Attach 0.032 0.765 52 2 Epoy resin 17ade Secret De Attach 0.032 0.765 0.032 0.000							520.24				21.9
Silver 7440:224 De Atlach 0.104 2.461 1,036 Epoxyresin 17rade Secret De Atlach 0.003 0.765 322 Marganese 7439:965 0.01 Margane											
Epory resin Trade Secret Die Attach 0.032 0.765 322 Managements (PV) Protective (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer outer floriginal packing information in this form concerning substances in their original 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 does not provide any warranty, express or implied, with respect to the information in she for corrective recovery or of this Certificate of Compliance for semiconductor products.  **Total***  **Total**  **Total***  **Total**  **Total***  **Total***  **Total**  **											
Salton P440-21-3 Chip (Del) 0.037 20-667 8,700 3.33 (mon) Total De Attach Not Total Weight 0.14 Chip (Del) 0.056 7 8,700 5.33 (mon) Total De Attach Not Total Weight 0.14 Chip (Del) 0.056 7 8,700 5.33 (mon) Total De Attach Not Total Weight 0.14 Chip (Del) 0.056 7 8,700 5.33 (mon) Total De Attach Not Total Weight 0.14 Chip (Del) 0.056 7 8,700 5.33 (mon) Total De Attach Not Total Weight 0.14 Chip (Del) 0.056 7 8,700 5.33 (mon) Total De Attach Not Total Weight 0.14 Chip (Del) 0.056 7 8,700 5.33 (mon) Total De Attach Not Total Weight 0.056 7 8,700 5.33 (mon) Total Del Attach Not Total Weight 0.056 7 8,700 5.33 (mon) Total Weight 0.056 7											
Silicon 744021-3 Chip (Die) 0.870 20.687 8,760 3.33 (mol Total 1 Die Attach 1 Not 17440-21-3 Tin 7440-21-3 Wire Bord 0.050 1.188 500 Silver 7440-22-4 74 Epoy resolution of the Complete State of the								Manganese			
Gold 7440-57-5 Write Bond 7440-57-5 That Gold 7440-57-5 The sequent element law layers and the law layers and law layers and the law layers and law											
Tin							3.33	(mg) Total			0.14
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive).  2.3755 g Total Mass  TOTALS: 100.000 2,375.540 1,000.000  2.375.540 1,00											
2.3755 g Total Mass semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHo-Of-Life Vehicles (ELV) Directive).  2.67 Total (mg) Chip (Die) % of Total Weight 0.87 total weight 0.87 total weight 0.87 total weight 0.87 total (mg) Chip (Die) % of Total Weight 0.87 total weight 0.87 total (mg) Chip (Die) % of Total Weight 0.87 total weight 0.87 total (mg) Chip (Die) % of Total Weight 0.87 tot	Tin	7440-31-5 Plati									
semiconductor device and its homogenous materials comply with EU Directive 2002/93/EC (RoHs-Ot-Life Vohicles (ELV) Directive).  20.67 Total (mg) Chip (Die) % of Total Weight 0.87 polarized (mg) Silved (mg) Chip (Die) % of Total Weight 0.87 polarized (mg) Chip (Mg) Ch				100.000	2,375.540	1,000,000		Gamma-butyrolactone		-	
polance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data.    Diplance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data.   Diplance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data.   Diplance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data.   Diplance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data.   Diplance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data.   Diplance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data.   Diplance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data.   Diplance with the above EU Directives has been verified via internal design controls, supplier has a very declaration of the very declaration in this form concerning substances restricted by RoHS in Microchip Technology Incorporated by subcontract assemblers and accuracy of data in this form because in has been compiled based on the ranges deed on the ranges deed on the ranges deed in the range deed in the range deed on the range and accuracy of data in this form because in has been compiled based on the range and accuracy of data in this form because in 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 do by data in this form because in a been compiled based on the ranges deed in the range deed in th									I otal	100.00	
plaince with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.    Doped Sillicon   T440-21-3   100	semiconductor device and its homogenous materials comply	with EU Directive 2002	/95/EC (RoHS Directive), EU Directive 2011/65/	EU (RoHS Rec	ast Directive)	and with EU	20.67	Total (ma)	Chin (Dio)	% of Total Weight	0.97
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L NJE 44 PLCC 10:11 AM : 5/6/2014

MICROCHIP				nation Base A	•		•	ogeneous Materials: g. pc boards, displays	s)	JEDEC 97 Produc Marking and/or Pkg. Labeling
Semiconductor Device Type	: L 68 (Lead) F	PLCC (W2/WF)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1380.06	(mg) Total	Mold Compound	% ot Total Weight	t 28.28
Silica, vitreous	60676-86-0	Mold Compound	24.038	1173.054	240.380		Silica, vitreous	60676-86-0	85.00	<del> </del>
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	1.732	84.529	17,322		Epoxy Resin	Trade Secret	6.13	1
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	1.732	84.529	17,322		Phenolic Resin	Trade Secret	6.13	•
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.693	33.812	6.929		Epoxy, Cresol Novolac	29690-82-2	2.45	1
Carbon Black	1333-86-4	Mold Compound	0.085	4,140	848		Carbon Black	1333-86-4	0.30	1
Copper	7440-50-8	Lead Frame	22.087	1077.843	220.869		Carbon black	Total	100.00	
Silver	7440-22-4	Lead Frame	0.429	20.954	4,294	1099.95	(mm) Tatal	Lead Frame	% of Total Weight	
Zirconium	7440-22-4	Lead Frame	0.023	1.100	225	1099.95	(mg) Total	7440-50-8		ZZ.34
							Copper		97.99	-
Manganese	7439-96-5	Lead Frame	0.001	0.055	11		Silver	7440-22-4	1.91	-
Silver	7440-22-4	Die Attach	9.983	487.146	99,825		Zirconium	7440-67-7	0.10	-
Diester Resin	94-80-4	Die Attach	1.997	97.429	19,965		Manganese	7439-96-5	0.01	<u>J</u>
Functionalized Urethane Resin	72869-86-4	Die Attach	0.666	32.476	6,655			Total	100.00	
Epoxy Resin	9003-36-5	Die Attach	0.333	16.238	3,328	649.53	(mg) Total	Die Attach	% of Total Weight	t_ 13.31
Epoxy Resin	13561-08-5	Die Attach	0.333	16.238	3,328		Silver	7440-22-4	75	
Silicon	7440-21-3	Chip (Die)	12.310	600.728	123,100		Diester Resin	94-80-4	15	
Gold	7440-57-5	Wire Bond	5.120	249.856	51,200	Fur	nctionalized Urethane Resin	72869-86-4	5	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	18.440	899.872	184,400		Epoxy Resin	9003-36-5	3	
		TOTALS:	100.000	4,880.000	1,000,000		Epoxy Resin	13561-08-5	3	
	4.8800	g Total Mass						Total	100.00	Ī
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ppliance with the above EU Directives has been verified via inter  chemical substance is absent from the list above, the chemical s  hnology Incorporated's knowledge and belief as of the date of th	ubstance is NOT a	n intentional ingredient in the semiconductor device					Doped Silicon	7440-21-3 <b>Total</b>	100	]
stance, if any, is not below the threshold of regulatory concern f ding compounds used by Microchip meet the UL94 V0 flammabil p://ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are	or any regulatory so ity standard for pla is/	cheme world-wide. stics. You can access the UL iQTM family of databa	ses to obtain a	ı test report at		249.86	(mg) Total	Wire Bond	% of Total Weight	t 5.12
d certain "reels" may be made from PVC plastic.			·				Doped Gold	7440-57-5	100	<u> </u>
crochip Technology Incorporated believes the information in this vices in their original packing materials is true and correct to the arantee the completeness and accuracy of data in this form becar ppliers. Supplier information is often protected from disclosure as ppliers. Information is provided only as estimates of the average timates do not include trace levels of dopants, metals, and non-m	best of its knowledguse it has been comestrade secrets and weight of these part	ge and belief, as of the date listed in this form. Micr piled based on the ranges provided in Material Saf some information may not have been provided by s ts and the average weight of anticipated significant	ochip Technolo ety Data Sheets subcontract as toxic metals co	ogy Incorporate s provided by r semblers and r	ed cannot raw material raw material			Total	100.00	
icrochip Technology Incorporated does not provide any warranty, arranties provided by Microchip Technology Incorporated and its si icrochip's quotations, sales order acknowledgement, and invoices	ubsidiaries are cor					899.87	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	t 18.44
crochip disclaims any duty to notify users of updates or changes herwise, suffered by users or third parties as a result of the users GS) or of this Certificate of Compliance for semiconductor produc	reliance on the inf						Tin	7440-31-5	100.00	
						4,880.000		Total	100.00	100.0

L 68 PLCC 10:11 AM: 5/6/2014

Semiconductor Device 1	Гуре: Al2 10 QFN 1.3х	1.8x0.55 2V		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	4.04	(mg) Total	Mold Compound	% ot Total Weight	36.7
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	
Copper	7440-50-8	Lead Frame	39.239	4.316	392,393			Total	100.00	
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	
Epoxy resin (Trade Secret - 10114)	Trade Secret	Die Attach	0.037	0.004	373			Total	100.00	
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 alv	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	- 10114)	18.63	
Tin	7440-31-5	Plating on external leads (pins)	1.815	0.200	18.145		Epoxy resin (Trade Secret	- 10105)	9.32	
Silver	7440-22-4	Plating on external leads (pins)	0.076	0.008	760		Amine (Trade Secret - 100	039)	4	
Copper	7440-50-8	Plating on external leads (pins)	0.010	0.001	95			Total	100.00	
		TOTALS	100.000	11.000	1.000.000	1.54	(mg) Total	Chip (Die)	% of Total Weight	14
		TOTALO								
semiconductor device and its homogenous materials com tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		otal Mass 5/EC (RoHS Directive), EU Directive 2011/65/E	U (RoHS Reca	st Directive) a	and with EU		Doped Silicon	7440-21-3 Total	100	
	ply with EU Directive 2002/9	5/EC (RoHS Directive), EU Directive 2011/65/E		st Directive) a	and with EU	0.66	Doped Silicon (mg) Total			6
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directive 2002/99 internal design controls, sur iical substance is NOT an int of this document, there is n	5/EC (RoHS Directive), EU Directive 2011/65/E oplier declarations, and /or analytical test data entional ingredient in the semiconductor devi o credible reason to believe that the unavoide	ce and, to the	best of Micro	chip	0.66		Total	100.00	6
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Diance with the above EU Directives has been verified via  hemical substance is absent from the list above, the chem  nology incorporated's knowledge and belief as of the date	ply with EU Directive 2002/99 internal design controls, sup- ical substance is NOT an interest of this document, there is no atory concern for any regulatemability standard for plastics	5/EC (RoHS Directive), EU Directive 2011/65/E oplier declarations, and /or analytical test data entional ingredient in the semiconductor devi o credible reason to believe that the unavoidatory scheme world-wide.	ce and, to the	best of Micro	chip of the	0.66	(mg) Total	Total Wire Bond	100.00 % of Total Weight	6
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified via  hemical substance is absent from the list above, the chem  nology incorporated's knowledge and belief as of the date  lical substance, if any, is not below the threshold of regula  ing compounds used by Microchip meet the UL94 V0 flam	ply with EU Directive 2002/99 internal design controls, sup- ical substance is NOT an int of this document, there is n atory concern for any regulat mability standard for plastics plastics/	5/EC (RoHS Directive), EU Directive 2011/65/E oplier declarations, and /or analytical test data entional ingredient in the semiconductor devi o credible reason to believe that the unavoida tory scheme world-wide. s. You can access the UL iQTM family of datal	ce and, to the ble impurity c	best of Microoncentration	chip of the at	0.66	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight 100.00	1.9
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified via the microlar with the above above, the chem nology incorporated's knowledge and belief as of the date placed substance, if any, is not below the threshold of regularing compounds used by Microchip meet the UL94 V0 flamm (/ul.com/global/eng/pages/offerings/industries/chemicals/porotective "tubes" in which the specific product is shipped.	ply with EU Directive 2002/9: internal design controls, sup- ical substance is NOT an int- of this document, there is n atory concern for any regulat mability standard for plastics lastics/ I are made from polyvinyl ch this form concerning substa- to the best of its knowledge at because it has been compile disclosure as trade secrets as of the average weight of the	S/EC (ROHS Directive), EU Directive 2011/65/E  poplier declarations, and /or analytical test data entional ingredient in the semiconductor devi o credible reason to believe that the unavoid tory scheme world-wide.  s. You can access the UL iQTM family of datal loride (PVC) plastic. "Window envelopes" use ances restricted by RoHS in Microchip Technind belief, as of the date listed in this form. Mic d based on the ranges provided in Material S and some information may not have been pro ness parts and the average weight of anticipa	ce and, to the tible impurity coases to obtain d to hold the pology Incorpor crochip Technafety Data She byided by subted significant	best of Micro oncentration a test report backing slip o ated's semico ology Incorpo ets provided contract asser toxic metals	chip of the  at  n the outer  onductor rated cannot by raw nblers and		(mg) Total  Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external	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  the hemical substance is absent from the list above, the chem  nology incorporated's knowledge and belief as of the date  lical substance, if any, is not below the threshold of regular  ing compounds used by Microchip meet the UL94 V0 flams  /ul.com/global/eng/pages/offerings/industries/chemicals/porotective "tubes" in which the specific product is shipped  and certain "reels" may be made from PVC plastic.  Technology Incorporated believes the information in  their original packing materials is true and correct to  antee the completeness and accuracy of data in this form  rial suppliers. Supplier information is often protected from  material suppliers. Information is provided only as estimate  material suppliers. Information is provided only as estimate.	ply with EU Directive 2002/99: internal design controls, sup- ical substance is NOT an int- of this document, there is n atory concern for any regular mability standard for plastics lastics/ I are made from polyvinyl ch this form concerning substa- to the best of its knowledge at- because it has been compile disclosure as trade secrets and non-metal materials co- anty, express or implied, with dits subsidiaries are contain	S/EC (ROHS Directive), EU Directive 2011/65/E  poplier declarations, and /or analytical test data entional ingredient in the semiconductor devi o credible reason to believe that the unavoid tory scheme world-wide.  s. You can access the UL iQTM family of datal loride (PVC) plastic. "Window envelopes" use ances restricted by RoHS in Microchip Technind belief, as of the date listed in this form. Mind based on the ranges provided in Material S and some information may not have been pro- nesse parts and the average weight of anticipa ntained within silicon devices (silicon IC) in the h respect to the information provided in this de-	ce and, to the table impurity consess to obtain d to hold the pology Incorpor crochip Technafety Data She to dispilicant e finished par eclaration. The	best of Micro oncentration on a test report packing slip of ated's semicology Incorpo etest provided contract asser toxic metals ats.	chip of the  at  n the outer enductor rated cannot by raw mblers and components. mited product		(mg) Total  Doped Gold  (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100.00 % of Total Weight 100.00 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified via  hemical substance is absent from the list above, the chem  nology Incorporated's knowledge and belief as of the date  ical substance, if any, is not below the threshold of regule  ing compounds used by Microchip meet the UL94 V0 flam  i/ul.com/global/eng/pages/offerings/industries/chemicals/p  protective "tubes" in which the specific product is shipped  and certain "reels" may be made from PVC plastic.  bechip Technology Incorporated believes the information in  these in their original packing materials is true and correct to  antee the completeness and accuracy of data in this form  rial suppliers. Supplier information is often protected from  naterial suppliers. Information is provided only as estimate  e estimates do not include trace levels of dopants, metals  sochip Technology Incorporated does not provide any warr  inties provided by Microchip Technology Incorporated an	ply with EU Directive 2002/99: internal design controls, sup- ical substance is NOT an internal design controls, sup- ical substance is NOT an internal design controls, sup- ical substance is NOT an internal design concern for any regular mability standard for plastics plastics/ If are made from polyvinyl ch this form concerning substate to the best of its knowledge as because it has been compile disclosure as trade secrets and non-metal materials co- anty, express or implied, with dits subsidiaries are contain oices.  Inges to Material Content Decisers' reliance on the informa-	SEC (ROHS Directive), EU Directive 2011/65/E  poplier declarations, and /or analytical test data entional ingredient in the semiconductor devi o credible reason to believe that the unavoida tory scheme world-wide.  S. You can access the UL iQTM family of datal doride (PVC) plastic. "Window envelopes" use ances restricted by ROHS in Microchip Technical dobelief, as of the date listed in this form. Mic did based on the ranges provided in Material S and some information may not have been pro- ease parts and the average weight of anticipa ntained within silicon devices (silicon IC) in the h respect to the information provided in this of ed in Microchip's standard terms and conditi- clarations and shall not be liable for any dama	ce and, to the able impurity consess to obtain d to hold the pology Incorpor crochip Technafety Data Shevided by subted significant e finished par eclaration. Thous of sale. The ges, direct or	best of Micro oncentration in a test report backing slip o ated's semico logy Incorpo lets provided contract asser toxic metals of ts. e exclusive, li lesse are provi	chip of the  at  n the outer enductor rated cannot by raw mblers and components. mited product ded in equential or		(mg) Total  Doped Gold  (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-31-5	100.00 % of Total Weight 100.00 100.00 % of Total Weight 95.50	-

10 QFN NiPdAu 10:12 AM : 5/6/2014

MICROCHIP  Semiconductor De	vice Type: KP QFN 12 4×4	HII POY		nation Base opper Alloy (				nogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Produ Marking and/o Pkg. Labeling e3
Basic Substance		"Contained In" Sub-Component	% Total Weight			2.58	(mg) Total	Mold Compound	% ot Total Weight	10.14
Silica, fused	CAS Number 60676-86-0	Mold Compound	9.126	mg/part 2.320	<b>ppm</b> 91.260		Silica, fused	60676-86-0	90.00	ı
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	U
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	13.30	Copper	7440-50-8	95.54	10.27
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	0.025	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	0.132	1,400		Phosphorous	7723-14-0	0.13	
Copper(II) oxide	1317-38-0	Die Attach	0.021	0.005	210		Filospilolous	Total	0.00	<u> </u>
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	0.10	Silver	7440-22-4	74.00	0.7
	7440-21-3	Wire Bond	0.206	0.052	2.063			7440-22-4 68475-94-5	74.00 20.00	
Copper Palladium	7440-05-3	Wire Bond	0.206	0.052	2,063		Epoxy resin Copper(II) oxide	1317-38-0	3.00	
Tin		ating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.970	1.009	39,700		Gamma-butvrolactone		3.00	
IIII	7440-31-5 Pla	ating on external leads (pins) - Matte 1 in / annealed at 150°C for 1 hour  TOTALS:	100.000	25.420	1.000.000		Gamma-butyrolactone	96-48-0 Total		<u>l</u>
			100.000	25.420	1,000,000			_		
		Total Mass				1.71	(mg) Total	Chip (Die)	% of Total Weight	6.71
is semiconductor device and its homogenous materials ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive		5/EC (RoHS Directive), EU Directive 2011/65/EU (F	RoHS Recast	Directive) and	with EU		Doped Silicon	7440-21-3	100	
ompliance with the above EU Directives has been verifie	d via internal design controls, sup									
pa uic abore Lo Directives ilds beeli veille		pplier declarations, and /or analytical test data.						Total	100.00	l
chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the	chemical substance is NOT an inte	entional ingredient in the semiconductor device a o credible reason to believe that the unavoidable				0.05	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.21
a chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the bstance, if any, is not below the threshold of regulatory olding compounds used by Microchip meet the UL94 VO	chemical substance is NOT an inte e date of this document, there is no concern for any regulatory schem flammability standard for plastics.	entional ingredient in the semiconductor device a o credible reason to believe that the unavoidable ne world-wide.	impurity cond	entration of t	he chemical	0.05	(mg) Total			0.21
a chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the bstance, if any, is not below the threshold of regulatory olding compounds used by Microchip meet the UL.94 Voi iep://ul.com/global/eng/pages/offerings/industries/chemic to protective "tubes" in which the specific product is sh d certain "reels" may be made from PVC plastic.	chemical substance is NOT an integrate of this document, there is no concern for any regulatory schem flammability standard for plastics.	entional ingredient in the semiconductor device a o credible reason to believe that the unavoidable ne world-wide.  5. You can access the UL iQTM family of database	impurity cond	centration of t	he chemical	0.05	1	Wire Bond	% of Total Weight	0.21
a chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the bstance, if any, is not below the threshold of regulatory olding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemice protective "tubes" in which the specific product is sh	chemical substance is NOT an inte e date of this document, there is no concern for any regulatory schem flammability standard for plastics. cals/plastics/ ipped are made from polyvinyl chl	entional ingredient in the semiconductor device a o credible reason to believe that the unavoidable ne world-wide.  You can access the UL iQTM family of database loride (PVC) plastic. "Window envelopes" used to	impurity cond es to obtain a hold the pac	centration of t test report at king slip on th	he chemical	0.05	Copper	Wire Bond 7440-50-8	% of Total Weight 98.25 1.75	0.21
chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the stance, if any, is not below the threshold of regulatory 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 she certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the informatic ices in their original packing materials is true and correantee the completeness and accuracy of data in this is pliers. Supplier information is often protected from displiers. Information is provided only as estimates of the	chemical substance is NOT an integrate date of this document, there is no concern for any regulatory schem (flammability standard for plastics.cals/plastics/ aipped are made from polyvinyl chloron in this form concerning substance to the best of its knowledge an form because it has been compiled sclosure as trade secrets and some a average weight of these parts and some average weight of the some average wei	entional ingredient in the semiconductor device a coredible reason to believe that the unavoidable ne world-wide.  . You can access the UL iQTM family of database for ide (PVC) plastic. "Window envelopes" used to unces restricted by RoHS in Microchip Technolog and belief, as of the date listed in this form. Microc database on the ranges provided in Material Safety e information may not have been provided by suid the average weight of anticipated significant to	es to obtain a  hold the pac  y Incorporate hip Technolo y Data Sheets bcontract ass xic metals co	test report at king slip on the d's semicond gy Incorporat provided by temblers and	he chemical he outer box uctor ed cannot raw material raw material	0.05	Copper	Wire Bond 7440-50-8 7440-05-3	% of Total Weight 98.25 1.75	0.21
chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the stance, if any, is not below the threshold of regulatory 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 she certain "reels" may be made from PVC plastic.	chemical substance is NOT an interest and the date of this document, there is not concern for any regulatory schem (flammability standard for plastics.cals/plastics/ sipped are made from polyvinyl chlorion in this form concerning substantiation in the set of its knowledge and form because it has been compiled sclosure as trade secrets and some a average weight of these parts an and non-metal materials contained warranty, express or implied, with and its subsidiaries are contained	entional ingredient in the semiconductor device a coredible reason to believe that the unavoidable ne world-wide.  b. You can access the UL iQTM family of database for ide (PVC) plastic. "Window envelopes" used to unces restricted by RoHS in Microchip Technolog and belief, as of the date listed in this form. Microc d based on the ranges provided in Material Safety e information may not have been provided by suit of the average weight of anticipated significant to a within silicon devices (silicon IC) in the finished on respect to the information provided in this declar	impurity condess to obtain a obold the pace y Incorporate hip Technolo / Data Sheets becontract ass xic metals coparts.	centration of t test report at king slip on the d's semicond gy Incorporat provided by the emblers and emponents. The xclusive, limit	ne outer box uctor ed cannot raw material raw material lesse	1.01	Copper	Wire Bond 7440-50-8 7440-05-3	% of Total Weight 98.25 1.75	0.21
chemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the stance, if any, is not below the threshold of regulatory ding compounds used by Microchip meet the UL94 V0 ("Jul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is she certain "reels" may be made from PVC plastic.  ochip Technology Incorporated believes the informatices in their original packing materials is true and corrantee the completeness and accuracy of data in this is olliers. Supplier information is often protected from disollers. Information is provided only as estimates of the mates do not include trace levels of dopants, metals, a cochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorporate ochip's quotations, sales order acknowledgement, an ochip disclaims any duty to notify users of updates or rwise, suffered by users or third parties as a result of	chemical substance is NOT an integrate date of this document, there is not concern for any regulatory schem of concern for any regulatory schem of flammability standard for plastics. Cals/plastics/ aipped are made from polyvinyl chlaton in this form concerning substance to the best of its knowledge and form because it has been compiles colosure as trade secrets and some a average weight of these parts an and non-metal materials contained warranty, express or implied, with ad and its subsidiaries are contained invoices.  To changes to Material Content Declifthe users' reliance on the information of the supers' reliance on the informatic content of the users' reliance on the informatic content of the content of the users' reliance on the informatic content of the content of the users' reliance on the informatic content of the users' reliance on the informatic content of the users' reliance on the informatic content of the content	entional ingredient in the semiconductor device a coredible reason to believe that the unavoidable ne world-wide.  b. You can access the UL iQTM family of database for ide (PVC) plastic. "Window envelopes" used to inde (PVC) plastic. "Window envelopes" used to inces restricted by RoHS in Microchip Technolog ind belief, as of the date listed in this form. Microchip data on the ranges provided in Material Safety information may not have been provided by sull dithe average weight of anticipated significant to within silicon devices (silicon IC) in the finished in respect to the information provided in this declared in Microchip's standard terms and conditions larations and shall not be liable for any damages,	impurity cond es to obtain a o hold the pac y Incorporate hip Technolo y Data Sheets boontract ass xic metals co parts. aration. The e of sale. These	centration of t test report at king slip on the d's semicond gy Incorporat provided by emblers and imponents. The xclusive, limite e are provided irect, consequi	the chemical the outer box uctor ed cannot raw material raw material lesse ed product d in uential or		Copper Palladium	Wire Bond  7440-50-8  7440-05-3  Total  Plating on external leads (pins) - Matte Tin /	% of Total Weight 98.25 1.75 100.00	
chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the stance, if any, is not below the threshold of regulatory ding compounds used by Microchip meet the UL94 VO://lul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sh certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatices in their original packing materials is true and corrantee the completeness and accuracy of data in this ispliers. Supplier information is often protected from displiers. Information is provided only as estimates of the mates do not include trace levels of dopants, metals, a prochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorporate	chemical substance is NOT an integrate date of this document, there is not concern for any regulatory schem of concern for any regulatory schem of flammability standard for plastics. Cals/plastics/ aipped are made from polyvinyl chlaton in this form concerning substance to the best of its knowledge and form because it has been compiles colosure as trade secrets and some a average weight of these parts an and non-metal materials contained warranty, express or implied, with ad and its subsidiaries are contained invoices.  To changes to Material Content Declifthe users' reliance on the information of the supers' reliance on the informatic content of the users' reliance on the informatic content of the content of the users' reliance on the informatic content of the content of the users' reliance on the informatic content of the users' reliance on the informatic content of the users' reliance on the informatic content of the content	entional ingredient in the semiconductor device a coredible reason to believe that the unavoidable ne world-wide.  b. You can access the UL iQTM family of database for ide (PVC) plastic. "Window envelopes" used to inde (PVC) plastic. "Window envelopes" used to inces restricted by RoHS in Microchip Technolog ind belief, as of the date listed in this form. Microchip data on the ranges provided in Material Safety information may not have been provided by sull dithe average weight of anticipated significant to within silicon devices (silicon IC) in the finished in respect to the information provided in this declared in Microchip's standard terms and conditions larations and shall not be liable for any damages,	impurity cond es to obtain a o hold the pac y Incorporate hip Technolo y Data Sheets boontract ass xic metals co parts. aration. The e of sale. These	centration of t test report at king slip on the d's semicond gy Incorporat provided by emblers and imponents. The xclusive, limite e are provided irect, consequi	the chemical the outer box uctor ed cannot raw material raw material lesse ed product d in uential 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  98.25  1.75  100.00  % of Total Weight  100.00	

12 QFN 4x4 10:12 AM : 5/6/2014

AICROCHIP  Semiconductor Device	Type: MG 16 (Lead) QF	FN 3x3x0.9mm (P9)		nation Base A pper Alloy (C			•	ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Produ Marking and/or Pkg. Labeling e3
	1 1	"Contained In"	% Total			13.79	( ) <b>T</b> ( )	Mold Compound	% ot Total Weight	63.82
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	13.79	(mg) Total	wola Compouna	% of 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 (NLP # 500-033-5)	Trade Secret	Mold Compound	3.095	0.669	30,953	Epox	y Resin (NLP # 500-033-5)	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		1 Hoopherodo	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	0.06	Silver	7440-22-4	78	0.33
Gold	7440-21-3	Wire Bond	1.840	0.397	18.400		Acrylate resins Proprietary	Trade Secret	18	
Tin			5.310	1.147	53.100		Treated silica	Trade Secret	18	
IIII	7440-31-5 Plat	ting on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour							_	
		TOTAL C.	100 000							
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directive 2002/9	, , ,	100.000 HS Recast Dir	21.600 rective) and wi	1,000,000 th EU	1.16	Total (mg)	Trade Secret  Total  Chip (Die)	2 100.00 % of Total Weight	5.35
s semiconductor device and its homogenous materials com active 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	internal design controls, sur internal design controls au incal substance is NOT an int	Total Mass  5/EC (RoHS Directive), EU Directive 2011/65/EU (Ro  pplier declarations, and /or analytical test data.  tentional ingredient in the semiconductor device an	HS Recast Dir	rective) and wi	th EU			Total	100.00	5.35
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Appliance 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	internal design controls, sup internal design controls, sup nical substance is NOT an int iment, there is no credible re egulatory scheme world-wide mability standard for plastics	Total Mass  5/EC (RoHS Directive), EU Directive 2011/65/EU (Ro  pplier declarations, and /or analytical test data.  tentional ingredient in the semiconductor device an  ason to believe that the unavoidable impurity conce	HS Recast Dir	rective) and wi of Microchip T e chemical sul	th EU		Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	5.35
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance 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 redding compounds used by Microchip meet the UL94 V0 flam:  1//ul.com/global/eng/pages/offerings/industries/chemicals/f	internal design controls, sup internal design controls, sup nical substance is NOT an int iment, there is no credible re egulatory scheme world-wide mability standard for plastics plastics/	Total Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU (Ro poplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device an ason to believe that the unavoidable impurity conce b. s. You can access the UL iQTM family of databases	HS Recast Dir d, to the best entration of the to obtain a te	rective) and wi of Microchip T e chemical sul st report at	th EU echnology bstance, if	1.16	Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % 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 chemical substance is absent from the list above, the chem porated's knowledge and belief as of the date of this docuis not below the threshold of regulatory concern for any reling compounds used by Microchip meet the UL94 V0 flam //ul.com/global/eng/pages/offerings/industries/chemicals/pprotective "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 opleteness and accuracy of data in this form because it has olier information is often protected from disclosure as trad mation is provided only as estimates of the average weigh	internal design controls, sup- internal design controls, sup- inical substance is NOT an internal, there is no credible re- geulatory scheme world-wide mability standard for plastics lastics/ d are made from polyvinyl ch this form concerning substa- fits knowledge and belief, a been compiled based on the e secrets and some informat tt of these parts and the aver-	Total Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU (Ro pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device an ason to believe that the unavoidable impurity conce a. s. You can access the UL iQTM family of databases aloride (PVC) plastic. "Window envelopes" used to h ances restricted by RoHS in Microchip Technology as of the date listed in this form. Microchip Technolog arranges provided in Material Safety Data Sheets pr tion may not have been provided by subcontract as age weight of anticipated significant toxic metals or	d, to the best to obtain a termold the packingly lincorporated's pay lincorporated by raw semblers and	rective) and wi of Microchip T e chemical sul st report at ng slip on the s semiconduct ted cannot gue material supp raw material supp	th EU echnology bstance, if outer box or devices in arantee the lilers.	1.16	Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	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 verified via chemical substance is absent from the list above, the chem	internal design controls, sup- internal design controls, sup- inical substance is NOT an internal there is no credible re- gulatory scheme world-wide mability standard for plastics lastics/ d are made from polyvinyl ch this form concerning substa- of its knowledge and belief, a been compiled based on the e secrets and some informat at of these parts and the aver- its contained within silicon de anty, express or implied, witl	Total Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU (Ro pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device an asson to believe that the unavoidable impurity conce b. s. You can access the UL iQTM family of databases aloride (PVC) plastic. "Window envelopes" used to h ances restricted by RoHS in Microchip Technology us of the date listed in this form. Microchip Technolog to ranges provided in Material Safety Data Sheets pr tion may not have been provided by subcontract as arge weight of anticipated significant toxic metals of twices (silicon IC) in the finished parts.  The respect to the information provided in this declarate	d, to the best entration of the to obtain a termold the packin lincorporated's pay Incorporate by Incorporated by raw semblers and omponents. The excitation. The excitation. The excitation.	rective) and wi of Microchip T e chemical sul st report at ng slip on the s semiconduct ted cannot gua material supp raw material s hese estimate:	th EU  echnology bstance, if  outer box  or devices in arantee the filers. suppliers. s do not  product	1.16	Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (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 100 100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance 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 red ding compounds used by Microchip meet the UL94 V0 flam b://ul.com/global/eng/pages/offerings/industries/chemicals/reprotective "tubes" in which the specific product is shipped certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information in roriginal packing materials is true and correct to the best capleteness and accuracy of data in this form because it has polier information is often protected from disclosure as trad furnation is provided only as estimates of the average weigh ude trace levels of dopants, metals, and non-metal material rochip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated and	internal design controls, sup- internal design controls, sup- inical substance is NOT an internal there is no credible re- gulatory scheme world-wide mability standard for plastics olastics/ d are made from polyvinyl ch this form concerning substa- of its knowledge and belief, a been compiled based on the e secrets and some informat at of these parts and the aver- is contained within silicon de anty, express or implied, with d its subsidiaries are contain unges to Material Content Dec users' reliance on the inform.	Total Mass 5/EC (RoHS Directive), EU Directive 2011/65/EU (Ro pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device an ason to believe that the unavoidable impurity conce be. s. You can access the UL iQTM family of databases sloride (PVC) plastic. "Window envelopes" used to he ances restricted by RoHS in 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 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 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 the condition of the date of the	d, to the best to obtain a test obtain a tes	rective) and wi of Microchip T e chemical sul st report at ng slip on the s semiconducted cannot gue raw material supp raw material supp raw material s hese estimate:	th EU  echnology betance, if  outer box  for devices in arantee the lilers. suppliers. s do not  product Microchip's	0.40	Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (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	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	1.84

MG 16L QFN 10:12 AM : 5/6/2014

AICROCHIP  Semiconductor Device	e Type: ML 16 (Lead)	OFN 4x4mm (D5 / DS)		nation Base A	•		•	ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Markin and/or Pkg. Labeling e3
		"Contained In"	% Total			19.49	(mg) Total	Mold Compound	% ot Total Weight	46.75
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	19.49	(mg) rotai	wola Compound	% of 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 (NLP # 500-033-5)	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	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	38.511	16.059	385,112			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	7440-22-4	Lead Frame	0.768	0.320	7,679		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.050	0.021	504		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.033	0.014	333		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.022	0.426	10,218		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.236	0.098	2,358		Phosphorous	7723-14-0	0.08	
Treated silica	Trade Secret	Die Attach	0.026	0.011	262			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	
Gold	7440-57-5	Wire Bond	0.790	0.329	7,900		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	1.230	29,500		Treated silica	Trade Secret	2	
1111									•	
1111	•	TOTALS:	100.000	41.700	1,000,000	Heter	ocyclic organic compound	Trade Secret	2	
emiconductor device and its homogenous materials c		g Total Mass			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	3.29	Total (mg)	Trade Secret  Total  Chip (Die)	100.00 % of Total Weight	7.89
semiconductor device and its homogenous materials c 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 (R			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.89
emiconductor device and its homogenous materials of the 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified emical substance is absent from the list above, the chorated's knowledge and belief as of the date of this denoted by the chorated of the content of the conten	via internal design control nemical substance is NOT ocument, there is no cred by regulatory scheme work	g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/65/EU (ROHS	RoHS Recast D and, to the bes acentration of	irective) and v	with EU	3.29	Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
semiconductor device and its homogenous materials of 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 chaporated's knowledge and belief as of the date of this dis 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 control nemical substance is NOT ocument, there is no cred y regulatory scheme work ammability standard for p ls/plastics/	g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS DIRECTIVE), EU DIRECTIVE (ROHS DIRECTIV	ROHS Recast D and, to the bes accentration of	Directive) and with the chemical set report at	with EU  Technology substance, if		Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.89 0.79
semiconductor device and its homogenous materials of citive 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 chroproated's knowledge and belief as of the date of this dis not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl./lul.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 control nemical substance is NOT ocument, there is no cred y regulatory scheme work ammability standard for p ls/plastics/	g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS DIRECTIVE), EU DIRECTIVE (ROHS DIRECTIV	ROHS Recast D and, to the bes accentration of	Directive) and with the chemical set report at	with EU  Technology substance, if	3.29	Total (mg)  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	
semiconductor device and its homogenous materials c 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 chrorated's knowledge and belief as of the date of this dis not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl/ful.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	via internal design control memical substance is NOT ocument, there is no cred by regulatory scheme work ammability standard for p ls/plastics/ ped are made from polyvi n in this form concerning best of its knowledge and e it has been compiled bar rade secrets and some in ight of these parts and the	g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), East data.  an intentional ingredient in the semiconductor device a bible reason to believe that the unavoidable impurity conditional direction of the semiconductor device. In the unavoidable impurity conditional direction of the semiconductor of the unavoidable impurity conditional direction of the semiconductor of the unavoidable in the semiconductor of the semi	and, to the best contration of the bottom of the packers of the pa	t of Microchip the chemical s est report at king slip on the d's semicondu orated canno y raw materia d raw materia	with EU  Technology substance, if  e outer box actor devices t guarantee I suppliers. I suppliers.	3.29	Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
semiconductor device and its homogenous materials of citive 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 chroorated's knowledge and belief as of the date of this dis not below the threshold of regulatory concern for an ining compounds used by Microchip meet the UL94 V0 fl/ful.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic.  sochip Technology Incorporated believes the information eir original packing materials is true and correct to the completeness and accuracy of data in this form becaus timation is provided only as estimates of the average we made of the average we	via internal design contro memical substance is NOT ocument, there is no cred y regulatory scheme work ammability standard for p ils/plastics/ ped are made from polyvia n in this form concerning is best of its knowledge and e it has been compiled bar rade secrets and some inf ight of these parts and the rials contained within silic varranty, express or implie and its subsidiaries are c	g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	and, to the best occurration of the set obtain a to bold the pack by Incorporated the sets provided by Incorporated the sets provided the sassemblers and components.	t of Microchip the chemical s est report at king slip on the d's semicondu orated canno by raw materia d raw materia These estimat	with EU  Technology substance, if  e outer box actor devices t guarantee I suppliers. I suppliers. I suppliers. I de do not ad product	3.29	Total (mg)  Doped Silicon  (mg) Total  Doped 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	
semiconductor device and its homogenous materials of tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Dilance with the above EU Directives has been verified hemical substance is absent from the list above, the chromated's knowledge and belief as of the date of this dis 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 pertain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information is original packing materials is true and correct to the completeness and accuracy of data in this forcome because the information is often protected from disclosure as to mation is provided only as estimates of the average we de trace levels of dopants, metals, and non-metal mate when the provided by Microchip Technology Incorporated does not provide any we anties provided by Microchip Technology Incorporated possible informations, sales order acknowledgement, and possible placeling is quotations, sales order acknowledgement, and possible placeling is quotations.	via internal design control memical substance is NOT ocument, there is no credity regulatory scheme work ammability standard for pils/plastics/ ped are made from polyvim in this form concerning best of its knowledge and eit has been compiled batarde secrets and some infight of these parts and the rials contained within silic varranty, express or implie and its subsidiaries are coinvoices.	g Total Mass  002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS	and, to the best centration of the second and the packers of the packers of the second and the packers of the second and the s	t of Microchip the chemical s est report at king slip on the d's semicondu porated canno by raw materia d raw materia These estimat clusive, limite a are provided	with EU  Technology substance, if  e outer box actor devices t guarantee I suppliers. I suppliers. I suppliers in ential or	0.33	Total (mg)  Doped Silicon  (mg) Total  Doped 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	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.79

ML 16 QFN 10:13 AM : 5/6/2014

1CROCHIP	Type: ML 20 (Lead) QFN	Avamm (GA   GM)		nation Base A pper Alloy (C	•		•	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Produ Marking and/or Pkg. Labeling e3
Semiconductor Device	r Type. WIL 20 (Lead) QFN	"Contained In"	% Total		1			1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	22.31	(mg) Total	Mold Compound	% ot Total Weight	51.79
Silica, fused	60676-86-0	Mold Compound	46.611	20.080	466,110		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.512	1.082	25,118	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.512	1.082	25,118		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.155	0.067	1,554		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	36.404	15.683	364,040			Total	100.00	
Tin	7440-31-5	Lead Frame	0.093	0.040	934	16.10	(mg) Total	Lead Frame	% of Total Weight	37.37
Silver	7440-22-4	Lead Frame	0.712	0.307	7,119		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.067	0.029	673		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.093	0.040	934		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.053	0.454	10.530		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.243	0.105	2,430		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.027	0.012	270	l		Total	100.00	ļ
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	1.900	44.100	0.00	Silver	7440-22-4	78 78	
Gold	7440-57-5	Wire Bond	0.640	0.276	6,400		Acrylate resins Proprietary	Trade Secret	18	
Tin		n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.440	1.913	44,400		Treated silica	Trade Secret	2	
	7440-31-3 Flating 0	TOTALS:	100.000	43.080	1,000,000	Hoto	rocyclic organic compound	Trade Secret	2	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		tal Mass C (RoHS Directive), EU Directive 2011/65/EU (R				1.90	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	4.41
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Dilance with the above EU Directives has been verified vehicles substance is absent from the list above, the che	omply with EU Directive 2002/95/E0 ia internal design controls, supplicemical substance is NOT an intenti	tal Mass C (RoHS Directive), EU Directive 2011/65/EU (R er declarations, and /or analytical test data. ional ingredient in the semiconductor device a	RoHS Recast D	irective) and v	vith EU			Total	100.00	4.41
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified venemical substance is absent from the list above, the che porated's knowledge and belief as of the date of this does not below the threshold of regulatory concern for any ng compounds used by Microchip meet the UL94 VO fla	in internal design controls, suppliced in internal design controls, suppliced in internal substance is NOT an intenticument, there is no credible reaso regulatory scheme world-wide.	cal Mass C (RoHS Directive), EU Directive 2011/65/EU (R er declarations, and /or analytical test data. ional ingredient in the semiconductor device a in to believe that the unavoidable impurity con	toHS Recast D and, to the best centration of the	irective) and v t of Microchip he chemical si	vith EU		Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	0.64
semiconductor device and its homogenous materials concive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). In pliance with the above EU Directives has been verified vechemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical is not below the threshold of regulatory concern for any string compounds used by Microchip meet the UL94 V0 flat/ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp certain "reels" may be made from PVC plastic.	ia internal design controls, suppliced in internal design controls, suppliced in internal substance is NOT an intenticument, there is no credible reaso regulatory scheme world-wide.  Immability standard for plastics. Yes/plastics/	al Mass C (RoHS Directive), EU Directive 2011/65/EU (R er declarations, and /or analytical test data. ional ingredient in the semiconductor device a in to believe that the unavoidable impurity con ou can access the UL iQTM family of database	toHS Recast D and, to the best centration of the	irective) and v t of Microchip he chemical so est report at	vith EU  Technology ubstance, if	1.90	Total (mg)  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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified vechemical substance is absent from the list above, the che reporated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any ting compounds used by Microchip meet the UL94 V0 flact/lul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp	omply with EU Directive 2002/95/EG ia internal design controls, supplice emical substance is NOT an intenticument, there is no credible reaso regulatory scheme world-wide. mmability standard for plastics. You for plastics/ ed are made from polyvinyl chloric in this form concerning substance est of its knowledge and belief, as it has been compiled based on the ade secrets and some information ght of these parts and the average	cal Mass C (RoHS Directive), EU Directive 2011/65/EU (R er declarations, and /or analytical test data. ional ingredient in the semiconductor device a in 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 of the date listed in this form. Microchip Tech e ranges provided in Material Safety Data Shee may not have been provided by subcontract a weight of anticipated significant toxic metals	nd, to the best centration of the sto obtain a to hold the pack y Incorporated inology Incorp	t of Microchip the chemical si est report at ing slip on the 's semicondurorated cannot y raw material d raw material	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers.	1.90	Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified vehicles with the above EU Directives has been verified vehicles and selected is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 flat/ful.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp certain "reels" may be made from PVC plastic.  ochip Technology Incorporated believes the information eir original packing materials is true and correct to the beampleteness and accuracy of data in this form because piler information is often protected from disclosure as tramation is provided only as estimates of the average well and the service of the average well and the service of the average well armation is provided only as estimates of the average well armation is provided only as estimates of the average well armation is provided only as estimates of the average well armation is provided only as estimates of the average well armation is provided only as estimates of the average well armation is provided only as estimates of the average well armation is provided only as estimates of the average well armation is provided only as estimates of the average well armation is provided only as estimates of the average well armatical arma	mply with EU Directive 2002/95/EG ia internal design controls, supplice mical substance is NOT an intenticument, there is no credible reaso regulatory scheme world-wide. mmability standard for plastics. Yes/plastics/ ed are made from polyvinyl chloric in this form concerning substance est of its knowledge and belief, as it has been compiled based on the ade secrets and some information ght of these parts and the average lals contained within silicon device rrranty, express or implied, with re und its subsidiaries are contained its	cal Mass C (RoHS Directive), EU Directive 2011/65/EU (RoHS DIRECTIVE), EVENT OF THE SETTING THE	not, to the best centration of the set to obtain a transfer of the hold the pack y Incorporated inology Incorporate of inology Incorporat	t of Microchip he chemical si est report at ing slip on the 's semiconduc orated cannot y raw material d raw material These estimate	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. set do not d product	1.90	Total (mg)  Doped Silicon  (mg) Total  Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vehemical substance is absent from the list above, the cheporated'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 VO flat/ul.com/global/eng/pages/offerings/industries/chemicals orotective "tubes" in which the specific product is shipp pertain "reels" may be made from PVC plastic.  Technology Incorporated believes the information beir original packing materials is true and correct to the being leteness and accuracy of data in this form because liler information is often protected from disclosure as tramation is provided only as estimates of the average well de trace levels of dopants, metals, and non-metal materiochip Technology Incorporated does not provide any waanties provided by Microchip Technology Incorporated a	omply with EU Directive 2002/95/EG ia internal design controls, supplice inical substance is NOT an intenticument, there is no credible reaso regulatory scheme world-wide. Immability standard for plastics. Yes/plastics/ ied are made from polyvinyl chloric in this form concerning substance est of its knowledge and belief, as it has been compiled based on the add secrets and some information ght of these parts and the average ials contained within silicon device rranty, express or implied, with re and its subsidiaries are contained in voices. In anges to Material Content Declara e users' reliance on the informatio	cal Mass C (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), European and John Long and Jo	and, to the best centration of the es to obtain a to the hold the pack y incorporated anology incorporate to provided by incorporates provided by incorporates and components. The ex- of sale. These	irective) and v t of Microchip he chemical si est report at ing slip on the 's semicondu- orated cannot y raw material These estimate clusive, limite are provided i	rechnology ubstance, if e outer box ctor devices guarantee suppliers. es do not d product n	0.28	Total (mg)  Doped Silicon  (mg) Total  Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.64

ML 20 QFN 10:13 AM : 5/6/2014

ICROCHIP  Semiconductor Device	Type: MQ 20 (Lead) QF	N 5x5x0.9mm (P8)		nation Base A pper Alloy (C			•	ogeneous Materials: .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	35.52	(mg) Total	Mold Compound	% ot Total Weight	52.91
Silica, fused	60676-86-0	Mold Compound	47.619	31.967	476,190		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.566	1.723	25,661	Epoxy	Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.566	1.723	25,661		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			Total	100.00	
Tin	7440-31-5	Lead Frame	0.091	0.061	908	24.37	(mg) Total	Lead Frame	% of Total Weight	36.3
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	0.003	0.044	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		Gillollidii	Total		
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		g on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	2.873	42.800		Treated silica	Trade Secret	2	
1111	7 4 40 0 1 0   Flatting	TOTALS:	100.000	67.130	1.000.000	Heter	ocyclic organic compound	Trade Secret	2	
		TOTALS.		000	.,000,000	Hictor	ocyclic organic compound	Trade Coolet		
	0.06713 g To omply with EU Directive 2002/9		EU (RoHS Reca	ast Directive) a	and with EU	2.79	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	4.16
ive 2002/53/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	omply with EU Directive 2002/9 via internal design controls, su emical substance is NOT an in	95/EC (RoHS Directive), EU Directive 2011/65/E pplier declarations, and /or analytical test dat- tentional ingredient in the semiconductor dev	a. ice and, to the	best of Micro	ochip	2.79	Total (mg)  Doped Silicon		% of Total Weight	4.16
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Iliance with the above EU Directives has been verified the microstrate is absent from the list above, the chalogy Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 flault.com/global/eng/pages/offerings/industries/chemical rotective "tubes" in which the specific product is ship.	omply with EU Directive 2002/9 via internal design controls, su emical substance is NOT an in ate of this document, there is r julatory concern for any regula ammability standard for plastic is/plastics/	pplier declarations, and /or analytical test data tentional ingredient in the semiconductor device reading reason to believe that the unavoid story scheme world-wide.  s. You can access the UL iQTM family of data	a. ice and, to the able impurity o	best of Micro concentration	ochip of the t at	2.79		Chip (Die) 7440-21-3	% of Total Weight	0.54
semiconductor device and its homogenous materials of the 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Is aliance with the above EU Directives has been verified the list above, the memical substance is absent from the list above, the hology Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fit (ul.com/global/eng/pages/offerings/industries/chemical rotective "tubes" in which the specific product is shipped in the product in the process of the profession of the profession their original packing materials is true and correct guarantee the completeness and accuracy of data in taterial suppliers. Supplier information is often protect aw material suppliers. Information is provided only as conents. These estimates do not include trace levels of	omply with EU Directive 2002/9 via internal design controls, su emical substance is NOT an ini ate of this document, there is r julatory concern for any regula ammability standard for plastic s/plastics/ ped are made from polyvinyl ch in this form concerning subst t to the best of its knowledge a this form because it has been af from disclosure as trade sec stimates of the average weighi	pplier declarations, and /or analytical test data tentional ingredient in the semiconductor device credible reason to believe that the unavoid story scheme world-wide.  s. You can access the UL iQTM family of data horide (PVC) plastic. "Window envelopes" use tances restricted by RoHS in Microchip Technand belief, as of the date listed in this form. Microrets and some information may not have beet of these parts and the average weight of ant	a. ice and, to the able impurity of bases to obtain defended by ology Incorporaterial Safety E in provided by icipated significations.	e best of Micro concentration n a test report packing slip o rated's semicrology Incorpo Jata Sheets pi subcontract a icant toxic me	ochip of the  at at on the outer onductor orated rovided by assemblers stals		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight  100  100.00  % of Total Weight  100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Iliance with the above EU Directives has been verified the interior of the interior o	omply with EU Directive 2002/9  via internal design controls, su- emical substance is NOT an in- ate of this document, there is r- julatory concern for any regula ammability standard for plastic- s/plastics/ bed are made from polyvinyl ch- an in this form concerning subst- t to the best of its knowledge a this form because it has been ad from disclosure as trade see defrom disclosure as trade see strimates of the average weigh dopants, metals, and non-meta arranty, express or implied, wit porated and its subsidiaries ar	pplier declarations, and /or analytical test data tentional ingredient in the semiconductor device credible reason to believe that the unavoid story scheme world-wide.  s. You can access the UL iQTM family of data chloride (PVC) plastic. "Window envelopes" use tances restricted by RoHS in Microchip Technand belief, as of the date listed in this form. Microtes and some information may not have beet of these parts and the average weight of antal materials contained within silicon devices (at the respect to the information provided in this other tests and some information may not have beet to fine the parts and the average weight of antal materials contained within silicon devices (at the respect to the information provided in this of the parts and the	a.  ice and, to the able impurity of the able impurity of the able to hold the colory incorporate in provided by icipated significant in the declaration. The	e best of Micro concentration n a test report packing slip o rated's semice lology Incorpo Data Sheets pro subcontract a icant toxic me ee finished par ne exclusive, li	ochip of the  at at on the outer onductor orated rovided by assemblers etals rts. imited		Doped 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	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Iliance with the above EU Directives has been verified the semical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fixul.com/global/eng/pages/offerings/industries/chemical rotective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.  The prochoology Incorporated believes the information is in their original packing materials is true and correct in the second of the completeness and accuracy of data in the second of the completeness and accuracy of data in the second of the second	omply with EU Directive 2002/9  wia internal design controls, su, emical substance is NOT an ini ate of this document, there is r julatory concern for any regula ammability standard for plastic: s/plastics/ bed are made from polyvinyl ch in this form concerning subst t to the best of its knowledge a this form because it has been ad from disclosure as trade set estimates of the average weight dopants, metals, and non-meta arranty, express or implied, wit porated and its subsidiaries ar id invoices. hanges to Material Content Dec e users' reliance on the inform	pplier declarations, and /or analytical test dat- tentional ingredient in the semiconductor dev- no credible reason to believe that the unavoid story scheme world-wide.  s. You can access the UL iQTM family of datal holoride (PVC) plastic. "Window envelopes" use tances restricted by RoHS in Microchip Techn and belief, as of the date listed in this form. Mi- compiled based on the ranges provided in Mi- crets and some information may not have bee t of these parts and the average weight of ant al materials contained within silicon devices (it th respect to the information provided in this of e contained in Microchip's standard terms an clarations and shall not be liable for any dama	a.  ice and, to the able impurity of the able impurity of the able impurity of the able impurity of the able in a second in a	e best of Micro concentration in a test report packing slip of rated's semice lology incorpo- bata Sheets pi subcontract a icant toxic me re finished part in e exclusive, li of sale. These	ochip of the  t at  on the outer  onductor  orated rovided by assemblers tals trts.  imited are provided sequential or	0.36	Doped Silicon  (mg) Total  Doped Gold	Chip (Die)  7440-21-3  Total  Wire Bond  7440-57-5  Total  Praung on external leads (pins) - Matte Tin / annealed at 150°C for	% of Total Weight  100  100.00  % of Total Weight  100  100.00	0.54

MQ 20 QFN 10:13 AM : 5/6/2014

AICROCHIP Semiconductor Device	Type: MJ 24 (Lead)	QFN 4x4mm (J3)		nation Base A pper Alloy (C	•		•	nogeneous Materials: e.g. pc boards, display	ys)	JEDEC 97 Produ Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	21.53	(mg) Total	Mold Compound	% ot Total Weight	48.78
Silica, fused	60676-86-0	Mold Compound	43.902	19.374	439.020		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.366	1.044	23,658	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.366	1.044	23,658	1	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.146	0.065	1,463	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	37.193	16.413	371,930	1		Total	100.00	•
Tin	7440-31-5	Lead Frame	0.095	0.042	955	16.85	(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	97.42	
Zinc	7440-66-6	Lead Frame	0.069	0.030	687	1	Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.095	0.042	955		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.967	0.427	9,672		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.223	0.098	2,232		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.025	0.011	248			Total	100.00	-
Heterocyclic organic compound	Trade Secret	Die Attach	0.025	0.011	248	0.55	(mg) Total	Die Attach	% of Total Weight	1.24
Silicon	7440-21-3	Chip (Die)	6.770	2.988	67,700		Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.750	0.331	7,500	1	Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	1.889	42,800	1	Treated silica	Trade Secret	2	
		TOTALS:	100.000	44.130	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	
	0.0441	g Total Mass						Total	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive 20	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol	HS Recast Dir	ective) and wit	th EU	2.99	Total (mg)	Chip (Die)	% of Total Weight	6.77
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  npliance with the above EU Directives has been verified vehicles with the above to the state of the chemical substance is absent from the list above, the cheprorated's knowledge and belief as of the date of this do	omply with EU Directive 20 via internal design controls emical substance is NOT a ocument, there is no credit	DO2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce	I, to the best o	of Microchip To	echnology	2.99	Total (mg) Silicon	1		6.77
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vehicles with the above the chemical substance is absent from the list above, the chroporated'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 VO flate.	omply with EU Directive 20  via internal design controls  emical substance is NOT a  cument, there is no credit  r regulatory scheme world  immability standard for pla	DO2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce	I, to the best ontration of the	of Microchip To e chemical sub	echnology	2.99	( 3/	Chip (Die) 7440-21-3	% of Total Weight	6.77 0.75
npliance with the above EU Directives has been verified we chemical substance is absent from the list above, the cherporated'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 VO flat//ul.com/global/eng/pages/offerings/industries/chemical	omply with EU Directive 20 ria internal design controls emical substance is NOT a cument, there is no credit r regulatory scheme world ummability standard for pla s/plastics/	DO2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce wide.	i, to the best ontration of the	of Microchip To e chemical sub st report at	echnology ostance, if		Silicon	Chip (Die)  7440-21-3  Total  Wire Bond  7440-57-5	% of Total Weight  100  100.00  % of Total Weight  100	
incitive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified with the above EU Directives has been verified with the above is absent from the list above, the charporated's knowledge and belief as of the date of this doing is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 flat/fluicom/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp certain "reels" may be made from PVC plastic.  The compounds in the specific product is shippered to the product of the product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the second product in the specific product is shippered to the specific product in the specific product is shippered to the specific product in the specific product is shippered to the specific product in the specific product is shippered to the specific product in the specific product is shippered to the specific product in the specific product is shippered to the specific product in the specific product is shippered to the specific product in the specific product in the specific product in the specific prod	omply with EU Directive 20  ria internal design controls emical substance is NOT a cument, there is no credit or regulatory scheme world immability standard for pla s/plastics/ bed are made from polyvin in this form concerning s at of its knowledge and bel as been compiled based c ade secrets and some info ght of these parts and the	202/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol 2011/65/EU (Rol 3), supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases anyl chloride (PVC) plastic. "Window envelopes" used to houstances restricted by RoHS in Microchip Technology I lief, as of the date listed in this form. Microchip Technologo the ranges provided in Material Safety Data Sheets promation may not have been provided by subcontract assaverage weight of anticipated significant toxic metals co	d, to the best of the contraction of the coordinate at the coordin	of Microchip T. e chemical substance of the control	echnology stance, if  outer box  or devices in rantee the liers. uppliers.		Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight  100  100.00  % of Total Weight	
incitive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified with the above EU Directives has been verified with the above is absent from the list above, the charporated's knowledge and belief as of the date of this doing is not below the threshold of regulatory concern for any ding compounds used by Microchip meet the UL94 V0 flat/lu.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information or original packing materials is true and correct to the beautiful protected from disclosure as the plier information is often protected from disclosure as trumation is provided only as estimates of the average we undertrace levels of dopants, metals, and non-metal mater trochip Technology Incorporated does not provide any was contacted and the provided and the provi	omply with EU Directive 20  ria internal design controls emical substance is NOT a cument, there is no credit or regulatory scheme world immability standard for pla s/plastics/ bed are made from polyvin in this form concerning s at of its knowledge and bel as been compiled based o ade secrets and some info ght of these parts and the ials contained within silica erranty, express or implied	202/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol 2011/65/EU (Rol 3), supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases anyl chloride (PVC) plastic. "Window envelopes" used to houstances restricted by RoHS in Microchip Technology I lief, as of the date listed in this form. Microchip Technologo the ranges provided in Material Safety Data Sheets promation may not have been provided by subcontract assaverage weight of anticipated significant toxic metals co	d, to the best of intration of the to obtain a test old the packir incorporated's gy Incorporate by raw semblers and omponents. The tion. The excl	of Microchip To e chemical substance of the control of semiconducted cannot gua material supp raw material supp raw material supp raw material supp raw material supp	echnology stance, if  outer box  or devices in rantee the liers. uppliers. do not  product		Silicon  (mg) Total  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).  ppliance with the above EU Directives has been verified we  chemical substance is absent from the list above, the che  proposed is a substance 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 flat  //ul.com/global/eng/pages/offerings/industries/chemical  protective "tubes" in which the specific product is shipt  certain "reels" may be made from PVC plastic.   ochip Technology Incorporated believes the information  original packing materials is true and correct to the best  plere information is often protected from disclosure as transition is provided only as estimates of the average we  det trace levels of dopants, metals, and non-metal mater  ochip Technology Incorporated does not provide any we  ranties provided by Microchip Technology Incorporated  tations, sales order acknowledgement, and invoices.  ochip disclaims any duty to notify users of updates or c	omply with EU Directive 20 ria internal design controls emical substance is NOT a cument, there is no credit r regulatory scheme world immability standard for pla s/plastics/ bed are made from polyvin in this form concerning s at of its knowledge and bel as been compiled based o ade secrets and some info ght of these parts and the itals contained within silico arranty, express or implied and its subsidiaries are co hanges to Material Conten e users' reliance on the in	D02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol objective), EU Directive 2011/65/EU (Rol objective), and /or analytical test data. In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce-wide.  Bastics. You can access the UL iQTM family of databases and concern access the UL iQTM family of databases and choice (PVC) plastic. "Window envelopes" used to houstances restricted by RoHS in Microchip Technology I lief, as of the date listed in this form. Microchip Technologo the ranges provided in Material Safety Data Sheets promation may not have been provided by subcontract as average weight of anticipated significant toxic metals con devices (silicon IC) in the finished parts.	d, to the best of intration of the to obtain a test old the packir incorporated's gy Incorporate vided by raw semblers and omponents. The tion. The excl sale. These a irect or indire-	of Microchip To e chemical substance of the streport at any slip on the control of the semiconducted cannot gua material supp raw material	echnology ostance, if outer box or devices in trantee the liers. uppliers. s do not product Microchip's	0.33	Silicon  (mg) Total  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  100.00	0.75

MJ 24 QFN 10:14 AM : 5/6/2014

AICROCHIP  Semiconductor Do	rice Type: 28 QFN 5x5x0.	Down (CT)		nination Base Copper Alloy	•		•	nogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Dev	rice Type: 20 QFN 5x5x0.									
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	mag	28.43	(mg) Total	Mold Compound	% ot Total Weight	42.75
Silica, fused	60676-86-0	Mold Compound	38,475	25.586	384.750		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	2.073	1,379	20.734		Epoxy Resin	500-033-5	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.073	1.379	20,734		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.128	0.085	1,283		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	42.249	28.096	422,489			Total	100.00	
Tin	7440-31-5	Lead Frame	0.108	0.072	1,084	28.84	(mg) Total	Lead Frame	% of Total Weight	43.37
Silver	7440-22-4	Lead Frame	0.826	0.549	8,262		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.078	0.052	781		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.108	0.072	1.084		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.076	0.716	10.764		Zinc	7440-66-6	0.18	
Epoxy Resin	Trade Secret	Die Attach	0.304	0.202	3,036		Chromium	7440-47-3	0.25	
Silicon	7440-21-3	Chip (Die)	8.950	5.952	89,500		<u></u>	Total	100.00	
Gold	7440-57-5	Wire Bond	1.380	0.918	13,800	0.92	(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	1,443	21,700		Silver	7440-22-4	78.00	
				66.500	1.000.000		Epoxy Resin	Trade Secret	22.00	
		IOTALS:	100.000							
emiconductor device and its homogenous material		TOTALS: g Total Mass 02/95/EC (RoHS Directive). EU Directive 2011/65/E			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			Total	100.00	
rive 2002/53/EC (End-of-Life Vehicles (ELV) Directive liance with the above EU Directives has been verificated in the list above, the lemical substance is absent from the list above, the	s comply with EU Directive 20 a). ed via internal design controls chemical substance is NOT a	g Total Mass D2/95/EC (RoHS Directive), EU Directive 2011/65/EU , supplier declarations, and /or analytical test data in intentional ingredient in the semiconductor device	U (RoHS Rec	ast Directive)	and with EU	5.95	(mg) Total  Doped Silicon		100.00 % of Total Weight 100 100.00	8.95
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verificated in the list above, the nemical substance is absent from the list above, the nology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of ng compounds used by Microchip meet the UL94 Von vul.com/global/eng/pages/offerings/industries/chemicals.	s comply with EU Directive 20(a).  ed via internal design controls chemical substance is NOT a e date of this document, there regulatory concern for any re; 0 flammability standard for pla cals/plastics/	g Total Mass  2/95/EC (RoHS Directive), EU Directive 2011/65/EU  , supplier declarations, and /or analytical test data in intentional ingredient in the semiconductor deviction is no credible reason to believe that the unavoidal gulatory scheme world-wide.  stics. You can access the UL iQTM family of datab	U (RoHS Recall to the company of the	ast Directive)  be best of Microconcentration  in a test repor	and with EU	5.95 0.92	(mg) Total	Total Chip (Die) 7440-21-3	% of Total Weight	1.38
semiconductor device and its homogenous material ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive apliance with the above EU Directives has been verified themical substance is absent from the list above, the anology incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94 Vt.//ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is sland certain "reels" may be made from PVC plastic.	s comply with EU Directive 20(a).  ed via internal design controls chemical substance is NOT a e date of this document, there regulatory concern for any re; 0 flammability standard for pla cals/plastics/	g Total Mass  2/95/EC (RoHS Directive), EU Directive 2011/65/EU  , supplier declarations, and /or analytical test data in intentional ingredient in the semiconductor deviction is no credible reason to believe that the unavoidal gulatory scheme world-wide.  stics. You can access the UL iQTM family of datab	U (RoHS Recall to the company of the	ast Directive)  be best of Microconcentration  in a test repor	and with EU		(mg) Total  Doped Silicon	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 pliance with the above EU Directives has been verification with the above EU Directives has been verification of the compound of the co	s comply with EU Directive 20 a).  ed via internal design controls chemical substance is NOT a e date of this document, there regulatory concern for any regulatory concern for any regulatory concern for any regulatory concern for placals/plastics/ nipped are made from polyving tion in this form concerning strect to the best of its knowled form because it has been cond from disclosure as trade see stimates of the average weight netals, and non-metal material y warranty, express or implied ed and its subsidiaries are coi	g Total Mass  D2/95/EC (RoHS Directive), EU Directive 2011/65/EI  I, supplier declarations, and /or analytical test data In intentional ingredient in the semiconductor device Is no credible reason to believe that the unavoida gulatory scheme world-wide.  Stics. You can access the UL iQTM family of datab Id chloride (PVC) plastic. "Window envelopes" used In the standard of the date listed in this form. Mic papiled 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 the In with respect to the information provided in this detection.	U (RoHS Rec.  ce and, to the object impurity of the hold by subject in the hold part of the hold of the ho	ast Directive) a best of Micro concentration in a test repor packing slip o prated's semicrology Incorpo eets provided contract asse t toxic metals rts. he exclusive, I	and with EU  chip of the  at at  on the outer  conductor  orated cannot by raw  miblers and components.		(mg) Total  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight 100 100.00 % of Total Weight	
etive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verification of the hold of the hold of the above in a compound sused by Microchip meet the UL94 V(//ul.com/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is sland certain "reels" may be made from PVC plastic. The protective "tubes" in which the specific product is sland certain "reels" may be made from PVC plastic. The protective action in their original packing materials is true and corantee the completeness and accuracy of data in this irial suppliers. Supplier information is often protectematerial suppliers. Information is provided only as estimates do not include trace levels of dopants, in ochip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated control of the provided by Microchip Technology Incorporated control of section and control of the provided by Microchip Technology Incorporated control of section and control of the provided by Microchip Technology Incorporated control of section and control of the provided by Microchip Technology Incorporated contr	s comply with EU Directive 20: a). ed via internal design controls chemical substance is NOT a e date of this document, there regulatory concern for any re; 0 flammability standard for pla icals/plastics/ nipped are made from polyviny tion in this form concerning su rect to the best of its knowled form because it has been con d from disclosure as trade sec stimates of the average weight netals, and non-metal material y warranty, express or implied ed and its subsidiaries are coi nd invoices. or changes to Material Content of the users' reliance on the inf	g Total Mass  2/95/EC (RoHS Directive), EU Directive 2011/65/El  , supplier declarations, and /or analytical test data in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoida gulatory scheme world-wide.  stics. You can access the UL iQTM family of datab id chloride (PVC) plastic. "Window envelopes" user instances restricted by RoHS in Microchip Techno ge and belief, as of the date listed in this form. Mic apiled based on the ranges provided in Material Sc 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 the in, with respect to the information provided in this di that in Microchip's standard terms and condition.	U (RoHS Reci	ast Directive)  a best of Micro concentration  in a test repor packing slip of prated's semic provided contract asse it toxic metals rts.  the exclusive, I hese are prov indirect, cons	and with EU  achip of the  at at  an the outer  anductor  arated cannot by raw  mblers and components.  amited product ided in	0.92	(mg) Total  Doped Silicon  (mg) Total  Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	1.38
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive ilance with the above EU Directives has been verification with the above EU Directives has been verification of the cology incorporated's knowledge and belief as of the cal substance, if any, is not below the threshold of a geompounds used by Microchip meet the UL94 Vall.com/global/eng/pages/offerings/industries/chemicotective "tubes" in which the specific product is slad certain "reels" may be made from PVC plastic.  Thip Technology Incorporated believes the information is in their original packing materials is true and contact the completeness and accuracy of data in this all suppliers. Supplier information is often protecteaterial suppliers. Information is provided only as estimates do not include trace levels of dopants, in this prochable of the provide and the provided by Microchip Technology Incorporate their is quotations, sales order acknowledgement, and this disclaims any duty to notify users of updates of the provide and the provided in the provided by Microchip Technology Incorporate their is quotations, sales order acknowledgement, and their disclaims any duty to notify users of updates of the provided by Microchip Technology Incorporate their is quotations, sales order acknowledgement, and their disclaims any duty to notify users of updates of the provided by the disclaims and the provide and the provided by Microchip Technology Incorporate their is quotations, sales order acknowledgement, and the provided by Microchip Technology Incorporate their is quotations, and the provided by Microchip Technology Incorporate this provided by Microchip Technology Incorporate their is quotations, and the provided by Microchip Technology Incorporate their is quotations, and the provided by Microchip Technology Incorporate their is quotations, and the provided by Microchip Technology Incorporate their is quotations, and the provided by Microchip Technology Incorporate their is quotations, and the provided by Microchip Technology Incorporate their is quotations.	s comply with EU Directive 20: a). ed via internal design controls chemical substance is NOT a e date of this document, there regulatory concern for any re; 0 flammability standard for pla icals/plastics/ nipped are made from polyviny tion in this form concerning su rect to the best of its knowled form because it has been con d from disclosure as trade sec stimates of the average weight netals, and non-metal material y warranty, express or implied ed and its subsidiaries are coi nd invoices. or changes to Material Content of the users' reliance on the inf	g Total Mass  2/95/EC (RoHS Directive), EU Directive 2011/65/El  , supplier declarations, and /or analytical test data in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoida gulatory scheme world-wide.  stics. You can access the UL iQTM family of datab id chloride (PVC) plastic. "Window envelopes" user instances restricted by RoHS in Microchip Techno ge and belief, as of the date listed in this form. Mic apiled based on the ranges provided in Material Sc 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 the in, with respect to the information provided in this di that in Microchip's standard terms and condition.	U (RoHS Reci	ast Directive)  a best of Micro concentration  in a test repor packing slip of prated's semic provided contract asse it toxic metals rts.  the exclusive, I hese are prov indirect, cons	and with EU  achip of the  at at  an the outer  anductor  arated cannot by raw  mblers and components.  amited product ided in	0.92	(mg) Total  Doped Silicon  (mg) Total  Gold  (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	% of Total Weight 100.00 % of Total Weight 100.00 100.00 % of Total Weight	1.38

28 QFN 10:14 AM : 5/6/2014

MICROCHIP  Semiconductor Device	Type: ML 28 (Lead	) QFN 6x6 mm (M4/MM)		nation Base A	•		•	ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight			52.76	(mg) Total	Mold Compound	% ot Total Weight	51.93
Silica, fused	60676-86-0	Mold Compound	46.737	mg/part 47.485	<b>ppm</b> 467.370		075 ()	60676-86-0	90.00	1
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2.559	25,186	Enov	Silica, fused v Resin (NLP # 500-033-5)	Trade Secret	90.00 4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.519	2.559	25,186	Ерох	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	1		Total	100.00	
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 Die Attach	0.011	0.011 0.011	106 106	0.54	(··· ··) ▼ · ( ·· )	Total	100.00	0.50
Heterocyclic organic compound Silicon	Trade Secret 7440-21-3	Chip (Die)	3.290	3,343	32,900	0.54	(mg) Total Silver	Die Attach 7440-22-4	% of Total Weight 78	0.53
Gold	7440-21-3	Wire Bond	0.950	0.965	9,500	ł	Acrylate resins Proprietary	7440-22-4 Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.410	4.481	44,100		Treated silica	Trade Secret	2	
	7110010	TOTALS:	100.000	101.600	1.000.000	і н	leterocyclic organic compou	Trade Secret	2	
	0.1016	g Total Mass			,,		, , , , , , , , , , , , , , , , , , , ,	Total	100.00	
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 Reca	ast Directive)	and with EU	3.34	Total (mg)	Chip (Die)	% of Total Weight	3.29
ppliance with the above EU Directives has been verified	via internal design contro									
•	· ·						Doped Silicon	7440-21-3	100	
chemical substance is absent from the list above, the ch nnology Incorporated's knowledge and belief as of the d nical substance, if any, is not below the threshold of reg	nemical substance is NOT date of this document, the gulatory concern for any r	an intentional ingredient in the semiconductor de re is no credible reason to believe that the unavoic egulatory scheme world-wide.	vice and, to the dable impurity o	concentration	of the		Doped Silicon	7440-21-3 <b>Total</b>		
. themical substance is absent from the list above, the chenical substance is absent from the list above, the chenloogy Incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regular compounds used by Microchip meet the UL94 V0 fix	nemical substance is NOT date of this document, the gulatory concern for any r ammability standard for p	an intentional ingredient in the semiconductor de re is no credible reason to believe that the unavoic egulatory scheme world-wide.	vice and, to the dable impurity o	concentration	of the	0.97	Doped Silicon			0.95
chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regiding compounds used by Microchip meet the UL94 V0 fits:  2.//ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shiple and certain "reels" may be made from PVC plastic.	nemical substance is NOT date of this document, the gulatory concern for any r ammability standard for p lls/plastics/	an intentional ingredient in the semiconductor de re is no credible reason to believe that the unavoic egulatory scheme world-wide. lastics. You can access the UL iQTM family of data	vice and, to the dable impurity of abases to obtai	concentration	of the	0.97		Total Wire Bond 7440-57-5	% of Total Weight	0.95
chemical substance is absent from the list above, the ch hnology Incorporated's knowledge and belief as of the d mical substance, if any, is not below the threshold of reg ding compounds used by Microchip meet the UL94 V0 fla b://ul.com/global/eng/pages/offerings/industries/chemical	nemical substance is NOT date of this document, the gulatory concern for any r lammability standard for p lls/plastics/ ped are made from polyvi in in this form concerning to to the best of its knowle this form because it has red from disclosure as tracestimates of the average v	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 and seminary of the UL iQTM family of data and control of the Indianal seminary of the	vice and, to the dable impurity of the dable impurity of the dable impurity of the dable included by the dable included by the dable in provided by ticipated significable in the dable included by ticipated significable in the dable included by ticipated significable in the dable included by the dable includ	n a test repor packing slip o rated's semic nology Incorpo Data Sheets p subcontract : icant toxic me	of the t at on the outer onductor orated rovided by assemblers etals	0.97	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.95
chemical substance is absent from the list above, the ch hnology Incorporated's knowledge and belief as of the d mical substance, if any, is not below the threshold of reg ding compounds used by Microchip meet the UL94 V0 flic/l/ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipl and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information ices in their original packing materials is true and correct not guarantee the completeness and accuracy of data in material suppliers. Supplier information is often protect raw material suppliers information is often protect raw material suppliers and correct on the completeness on the provided only as a ponents. These estimates do not include trace levels of procchip Technology Incorporated does not provide any we duct warranties provided by Microchip Technology Incorporated for acknowledgement, and incorporated suppliers and controling incorporated to the controlin	nemical substance is NOT date of this document, the gulatory concern for any rammability standard for p Is/plastics/ ped are made from polyvin in in this form concerning at to the best of its knowled this form because it has ted from disclosure as trace estimates of the average of dopants, metals, and nor varranty, express or implier prorated and its subsidiar and invoices.	an intentional ingredient in the semiconductor de- re is no credible reason to believe that the unavoice gulatory scheme world-wide.  lastics. You can access the UL iQTM family of date myl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Tech 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 be- weight of these parts and the average weight of an 1-metal materials contained within silicon devices d, with respect to the information provided in this les are contained in Microchip's standard terms an	vice and, to the dable impurity of abases to obtained to hold the mology Incorpolicrochip Techniaterial Safety I en provided by ticipated significial incorporation in the declaration. The deconditions of	n a test repor packing slip of rated's semic nology Incorpo Data Sheets p subcontract : icant toxic me te finished pa ne exclusive, I of sale. These	of the t at on the outer onductor orated rovided by assemblers etals rts. limited are provided	0.97	(mg) Total  Doped Gold  (mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.95
chemical substance is absent from the list above, the ch hnology Incorporated's knowledge and belief as of the d mical substance, if any, is not below the threshold of reg ding compounds used by Microchip meet the UL94 V0 flict/lul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shiply and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information ices in their original packing materials is true and correct not guarantee the completeness and accuracy of data in material suppliers. Supplier information is often protect raw material suppliers information is provided only as a ponents. These estimates do not include trace levels of rochip Technology Incorporated does not provide any we duct warranties provided by Microchip Technology Incorporated to the provide and the complete provide and the complete provide and the contraction is provided only as a property of the contraction is provided only as a property of the contraction is provided only as a property of the contraction is provided only as a property of the contraction is provided only as a property of the contraction is provided only as a property of the contraction is provided only as a property of the contraction is provided only as a property of the contraction is provided only as a property of the contraction is provided only as a property of the contraction is provided only as a property of the contraction is provided only as a property of the contraction is a provided only as a provided	nemical substance is NOT date of this document, the gulatory concern for any reammability standard for pls/plastics/ ped are made from polyvin in this form concerning at to the best of its knowle in this form because it has the from disclosure as tracestimates of the average of dopants, metals, and nor varranty, express or implier porated and its subsidiar and invoices.	an intentional ingredient in the semiconductor de re is no credible reason to believe that the unavoir egulatory scheme world-wide.  lastics. You can access the UL iQTM family of data myl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Techi dge and belief, as of the date listed in this form. Meen compiled based on the ranges provided in Mee secrets and some information may not have be veight of these parts and the average weight of an immetal materials contained within silicon devices d, with respect to the information provided in this ides are contained in Microchip's standard terms and the Declarations and shall not be liable for any dam	vice and, to the dable impurity of the dable impurity of the dable impurity of the dable included in the dable included included in the dable included by the dable included in the dable included in the dable included in the dable included in the dable included inc	n a test repor packing slip of rated's semic nology Incorpor Data Sheets p subcontract icant toxic mo ne finished pa ne exclusive, I of sale. These indirect, cons	of the  t at  on the outer  onductor  orated rovided by assemblers etals rts.  limited are provided sequential or		(mg) Total  Doped Gold  (mg) Total	Wire Bond  7440-57-5  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100.00 % of Total Weight 100 100.00	
chemical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the disclassion of th	nemical substance is NOT date of this document, the gulatory concern for any reammability standard for pls/plastics/ ped are made from polyvin in this form concerning at to the best of its knowle in this form because it has the from disclosure as tracestimates of the average of dopants, metals, and nor varranty, express or implier porated and its subsidiar and invoices.	an intentional ingredient in the semiconductor de re is no credible reason to believe that the unavoir egulatory scheme world-wide.  lastics. You can access the UL iQTM family of data myl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Techi dge and belief, as of the date listed in this form. Meen compiled based on the ranges provided in Mee secrets and some information may not have be veight of these parts and the average weight of an immetal materials contained within silicon devices d, with respect to the information provided in this ides are contained in Microchip's standard terms and the Declarations and shall not be liable for any dam	vice and, to the dable impurity of the dable impurity of the dable impurity of the dable included in the dable included included in the dable included by the dable included in the dable included in the dable included in the dable included in the dable included inc	n a test repor packing slip of rated's semic nology Incorpor Data Sheets p subcontract icant toxic mo ne finished pa ne exclusive, I of sale. These indirect, cons	of the  t at  on the outer  onductor  orated rovided by assemblers etals rts.  limited are provided sequential or		(mg) Total  Doped Gold  (mg) 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	

ML 28 QFN 10:14 AM : 5/6/2014

Semiconductor Device	Type: ML or MM 2	28 (Lead) <b>QFN-S</b> 6x6mm (M2/MB)		nation Base A	•		•	ogeneous Materials: .g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
	1 1	"Contained In"	% Total				, ,,			
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	52.77	(mg) Total	Mold Compound	% ot Total Weight	51.94
Silica, fused	60676-86-0	Mold Compound	46.746	47.494	467,460		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2.559	25,191	Epoxy	Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.519	2.559	25,191		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	37.145	37.739	371,450			Total	100.00	
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		Copper	7440-50-8	95.54	
Zinc	7440-66-6	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	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.391	0.397	3,911		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.100	0.101	996		Phosphorous	7723-14-0	0.08	
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.033	0.034	334			Total	100.00	
Phenolic hardener	92-88-6	Die Attach	0.002	0.002	16	0.54	(mg) Total	Die Attach	% of Total Weight	0.53
Butyl cellosolve acetate	112-07-2	Die Attach	0.004	0.004	42		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	t-l	Butyl phenyl glycidyl ether	3101-60-8	6	
Tin	7440-31-5	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	
semiconductor device and its homogenous materials or citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU (	RoHS Recast	Directive) and	with EU	3.34	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	3.29
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified we themical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the di-	omply with EU Directive 2 ria internal design control emical substance is NOT ate of this document, ther	002/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device to is no credible reason to believe that the unavoidable	and, to the be	st of Microchi	p	3.34	<b>Total (mg)</b> Doped Silicon			3.29
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vehicles is above, the chi	omply with EU Directive 20 ria internal design control emical substance is NOT ate of this document, ther oncern for any regulatory ommability standard for pl	002/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable scheme world-wide.	and, to the be	st of Microchi <sub>l</sub> centration of t	p	0.97		Chip (Die) 7440-21-3	% of Total Weight	3.29
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified we themical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the distance, if any, is not below the threshold of regulatory co- ling compounds used by Microchip meet the UL94 V0 flat	omply with EU Directive 2: ria internal design control emical substance is NOT ate of this document, the incern for any regulatory immability standard for pl s/plastics/	5002/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device te is no credible reason to believe that the unavoidable scheme world-wide. astics. You can access the UL iQTM family of databas	and, to the be e impurity con ses to obtain a	st of Microchi centration of t test report at	p he chemical		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified we themical substance is absent from the list above, the cha- inology Incorporated's knowledge and belief as of the di- stance, if any, is not below the threshold of regulatory co- ling compounds used by Microchip meet the UL94 V0 flat //ul.com/global/eng/pages/offerings/industries/chemical- protective "tubes" in which the specific product is shipp	omply with EU Directive 2: ia internal design control emical substance is NOT ate of this document, ther oncern for any regulatory immability standard for pl s/plastics/ led are made from polyvir in this form concerning s t to the best of its knowled because it has been co sure as trade secrets and overage weight of these pa	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable scheme world-wide.  astics. You can access the UL iQTM family of databas  anyl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technolo dge and belief, as of the date listed in this form. Micro implied based on the ranges provided in Material Said a some information may not have been provided by su ints and the average weight of anticipated significant to	and, to the be a impurity conses to obtain a o hold the pace of th	st of Microchi centration of t test report at king slip on the d's semicond gy Incorporate s provided by emblers and r	ne outer box uctor ed cannot raw material aw material		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). pliance with the above EU Directives has been verified we themical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the detance, if any, is not below the threshold of regulatory coloring compounds used by Microchip meet the UL94 V0 flat/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipported the treels may be made from PVC plastic.  The concipe Technology Incorporated believes the information can their original packing materials is true and correct antee the completeness and accuracy of data in this for lights. Supplier information is often protected from discleptiers. Information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is provided only as estimates of the average in the supplier information is often provided in the supplier information is provided in the supplier in the supplier information is often provided in	omply with EU Directive 20 in a internal design control are of this document, therefore are of this document, therefore are of this document, therefore are made from polyvirus in this form concerning at the tothe best of its knowled me because it has been consure as trade secrets any erage weight of these part of the	5002/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable scheme world-wide.  astics. You can access the UL iQTM family of databas  nyl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technolo dge and belief, as of the date listed in this form. Micro implied based on the ranges provided in Material Said d some information may not have been provided by su ints and the average weight of anticipated significant to tained within silicon devices (silicon IC) in the finished d, with respect to the information provided in this deci-	and, to the be a impurity conses to obtain a o hold the pace of pace of pace of the pace of the pace of pace of pace of parts.	st of Microchi centration of t test report at king slip on the d's semicond gy Incorporate provided by iemblers and r mponents. Th	ne outer box uctor ed cannot raw material aw material ese		Doped 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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified with the above EU Directives has been verified with the mical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the diance, if any, is not below the threshold of regulatory colors of the diance, if any, is not below the threshold of regulatory colors of the UL94 V0 flating compounds used by Microchip meet the UL94 V0 flating compounds used by Microchip meet the UL94 V0 flating rotective "tubes" in which the specific product is shipp certain "reels" may be made from PVC plastic. The protective "tubes" in which the specific product is shipp certain "reels" may be made from PVC plastic. The protected information is often protected from discludiers. Supplier information is often protected from discludiers. Information is provided only as estimates of the anates do not include trace levels of dopants, metals, and poship Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated is a section of the control of the provided by Microchip Technology Incorporated is a section of the control of the provided by Microchip Technology Incorporated is a section of the control of the	omply with EU Directive 20 in a internal design control period is substance is NOT attent of this document, the incern for any regulatory immability standard for playlestics/ and it is the best of its knowled in this form concerning is to the best of its knowled in the beause it has been consure as trade secrets any reage weight of these pal non-metal materials confurnanty, express or implies and its subsidiaries are convoices.	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable scheme world-wide. astics. You can access the UL iQTM family of databas at location of the control of the cont	and, to the be e impurity con- les to obtain a condition of the pact of the pa	st of Microchic centration of t test report at king slip on the d's semicond gy incorporate s provided by emblers and r mponents. Th xclusive, limite e are provided	the chemical the chemical the cutter box the cannot the	0.97	Doped Silicon  (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	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.95

ML MM 28 QFN-S 10:15 AM : 5/6/2014

100.000

Semiconductor Device	Type: MI 40 (Lead	OFN evenous (ca)		nation Base A pper Alloy (C	- ,			geneous Materials: g. pc boards, displays	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	rype. WL 40 (Leau	"Contained In"	% Total	T	,		ı			63
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	Epoxy	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		
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 2.920	0.869	8,600		Acrylate resins Proprietary	Trade Secret	18	
				2.949	29,200		Treated silica	Trade Secret	2	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		101.000	4 000 000					
Tin semiconductor device and its homogenous materials of	0.1010	TOTALS: g Total Mass	100.000	101.000	1,000,000 d with EU	Hete	rocyclic organic compound  Total (mg)	Trade Secret  Total  Chip (Die)	2 100.00 % of Total Weight	
	0.1010 comply with EU Directive 2	TOTALS: g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/EU	100.000		,,,,,,,,	:		Trade Secret Total Chip (Die) 7440-21-3	100.00 % of Total Weight	
Tin semiconductor device and its homogenous materials of the conductor device and its homogenous materials of the conductor device (ELV) Directive).	0.1010 comply with EU Directive 2 via internal design contro nemical substance is NOT late of this document, thei gulatory concern for any re	TOTALS:  g Total Mass  1002/95/EC (RoHS Directive), EU Directive 2011/65/EU  Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab agulatory scheme world-wide.	100.000  I (RoHS Recast e and, to the belle impurity cor	Directive) and est of Microch acentration of	d with EU	2.75	Total (mg)  Doped Silicon	Trade Secret  Total  Chip (Die)  7440-21-3  Total	100.00 % of Total Weight 100 100.00	2.72
Tin  semiconductor device and its homogenous materials of the 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 changle in the comportated of the conclogy incorporated is knowledge and belief as of the changle in the conclusion of the conclusio	0.1010 comply with EU Directive 2 via internal design contro memical substance is NOT late of this document, thei gulatory concern for any re lammability standard for p	TOTALS:  g Total Mass  1002/95/EC (RoHS Directive), EU Directive 2011/65/EU  Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidab gulatory scheme world-wide.  Iastics. You can access the UL iQTM family of database.	100.000  I (RoHS Recast e and, to the be le impurity cor	Directive) and est of Microchacentration of a test report a	d with EU	:	Total (mg)	Trade Secret Total Chip (Die) 7440-21-3	100.00 % of Total Weight	2.72
Tin  semiconductor device and its homogenous materials of the 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 changley incorporated's knowledge and belief as of the onlogy incorporated's knowledge and belief as of the onload substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fi	0.1010 comply with EU Directive 2 via internal design contro memical substance is NOT late of this document, thei gulatory concern for any re lammability standard for p	TOTALS:  g Total Mass  1002/95/EC (RoHS Directive), EU Directive 2011/65/EU  Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidab gulatory scheme world-wide.  Iastics. You can access the UL iQTM family of database.	100.000  I (RoHS Recast e and, to the be le impurity cor	Directive) and est of Microchacentration of a test report a	d with EU	2.75	Total (mg)  Doped Silicon	Trade Secret  Total  Chip (Die)  7440-21-3  Total  Wire Bond  7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100	0.86
Tin  semiconductor device and its homogenous materials of the 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 chology Incorporated's knowledge and belief as of the onical substance, if any, is not below the threshold of reling compounds used by Microchip meet the UL94 V0 fiful.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	o.1010 comply with EU Directive 2 via internal design contro memical substance is NOT late of this document, thei gulatory concern for any ri lammability standard for p las/plastics/ ped are made from polyvi in in this form concerning to to the best of its knowle rm because it has been co closure as trade secrets an is of the average weight of	TOTALS:  g Total Mass  1002/95/EC (RoHS Directive), EU Directive 2011/65/EU  Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable gulatory scheme world-wide.  Iastics. You can access the UL IQTM family of databanyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technol dge and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Saf d some information may not have been provided by these parts and the average weight of anticipated si	e and, to the bille impurity cor asses to obtain a di to hold the particular di to hold the part	est of Microch centration of a test report a acking slip on ted's semicon ogy Incorpora s provided by semblers and metals compr	ip the tt the outer ductor ted cannot raw material raw	2.75	Total (mg)  Doped Silicon  (mg) Total	Trade Secret  Total  Chip (Die)  7440-21-3  Total  Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight 100	0.86
semiconductor device and its homogenous materials of the 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 chancel substance is absent from the list above, the chancel substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fi/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. pochip Technology Incorporated believes the informationes in their original packing materials is true and corrective the completeness and accuracy of data in this foliates. Supplier information is often protected from discontral suppliers. Information is provided only as estimate	O.1010 comply with EU Directive 2 via internal design contro memical substance is NOT date of this document, thei gulatory concern for any ri lammability standard for p als/plastics/ pped are made from polyvi in in this form concerning to to the best of its knowle rm because it has been co losure as trade secrets an is of the average weight of tals, and non-metal materic varranty, express or implie and its subsidiaries are co	TOTALS:  g Total Mass  1002/95/EC (RoHS Directive), EU Directive 2011/65/EU  Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab egulatory scheme world-wide.  Iastics. You can access the UL iQTM family of database inyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technol dge and belief, as of the date listed in this form. Micr mpiled based on the ranges provided in Material Safe d some information may not have been provided by these parts and the average weight of anticipated si als contained within silicon devices (silicon IC) in the d, with respect to the information provided in this de	e and, to the belief impurity cor asses to obtain a distribution of the particular ochip Technoloety Data Sheet subcontract as guifficant toxic efinished parts eclaration. The	est of Microch neentration of a test report a acking slip on ted's semicon ogy Incorpora s provided by semblers and metals compo- ic.	ip the t the outer ductor ted cannot raw material raw onents.	2.75	Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (mg) Total	Trade Secret  Total  Chip (Die)  7440-21-3  Total  Wire Bond  7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight 100	0.86

ML 40 QFN 10:15 AM : 5/6/2014

101.000

Semiconductor Device Type: M. 44 (Leas) GPN Seaba mm (13 / 18)  Balas Substance  CAS Number  Sub-Component Weight mg/part pm Silico, fueld Sub-Component Sub-Component Weight mg/part pm Silico, fueld Sub-Component Sub-Compone	AICROCHIP		050		nation Base A pper Alloy (C				ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Basic Substance	Semiconductor Device	Flype: ML 44 (Lead)	, ,								
Epon Resin Number   10016-6610   Molid Compound   1,934   358,30   17,000   100,000	Pagia Subatanaa	CAS Number			malnort	nnm	75.12	(mg) Total	Mold Compound	% ot Total Weight	39.87
Epon   Resin (Ref.   20033-3)   Trads Secret   Mod Compound   1,934   3,643   19,337     Physical Resis   Trads Secret   Mod Compound   1,934   3,643   19,337     Physical Resis   Trads Secret   4,85     Californ Disck   1,745-50-4   Mod Compound   1,756   1,756   1,756   1,756     Resis   1,745-50-4   Mod Compound   1,756   1,756   1,756   1,756     Resis   1,745-50-4   Resis   1,745   1,756   1,756   1,756   1,756     Resis   1,745-50-4   Resis   1,745   1,756   1,756   1,756   1,756   1,756     Resis   1,745-50-4   Resis   1,745   1,756   1,756   1,756   1,756     Resis   1,745-50-4   Resis   1,745   1,756   1,756   1,756   1,756   1,756   1,756     Resis   1,745-50-4   Resis   1,756   1,756   1,756   1,756   1,756   1,756   1,756     Resis   1,745-50-4   Resis   1,756   1,7								077 - 1	22272.22.2	20.00	
Principle Resirt							F				
Cation Black							Epox				
Copper   7449-90-90   Lead Farme   1.773   2.200   1.763   94.8   (mg) Total   Lead Farme   1.778   2.200   1.7783   94.8   (mg) Total   Lead Farme   1.778   9.200   1.7783   94.8   (mg) Total   Lead Farme   1.778   9.200   9.500											
Silver   1440-22-24   Lead Frame   0.955   1,800   0.552   Copper   7409-09-09   0.555   1,800						,		Calbon Black		0.00	
Silver 7440-224 Lead Frame 0.050 1.1800 0.9552 Page 1,800 0.9552 Page 1,800 0.9552 Page 1,800 0.9552 Page 1,800 0.9553 0.118 6.277 Page 1,800 0.118 6.277 Pa							04.40	() T-4-1			F0.44
Phosphorous 7723-14-0 Lead Frame 0.041 0.078 414 2.75   Silver 7440-254 De Artsch 1.168 2.234 1.186   Silver 7440-224 De Artsch 1.168 2.234 1.186   Acryline reina Picolatality 1766-2681 De Altsch 1.168 2.234 1.186   Prosphorous 7723-14-0 Secret 1.08   Acryline reina Picolatality 1766-2681 De Altsch 1.168 2.234 1.186   Silver 1.168 2.234 1.186   Prosphorous 7723-14-0 Secret 1.08   Prosphorous 7723-14-0 Secret 1.08   Prosphorous 7723-14-0 Secret 1.08   Silver 1.168 2.234 1.186   Silver 1.168 2.234 1.186   Silver 1.168 2.186   Silv							94.46				50.14
Phosphonous 17723-14-0 Lead Finne 0.041 0.076 4144 Silver 7440-22-4 1.911 Acytitar reains Propositary 1740-22-4 De Attach 1.168 2.274 1.1565 Acytitar reains Propositary 1740-22-4 De Attach 0.0274 0.515 2.768 Phosphonous 7723-14-0 0.008 Phosphonous 7723-14-0 De Attach 0.0274 0.0515 2.768 Phosphonous 7723-14-0 De Attach 0.0274 0.0274 0.0515 2.768 Phosphonous 7723-14-0 De Attach 0.0274											
Actylate resins Proportedary  Trade Secret  Die Attach  October 1 7440-92-4  Die Attach  October 1 7440-92-5  Trade slice  Trade Secret  Die Attach  October 1 7440-92-5  October 1 7440-92-5  October 1 7440-92-7  October 2 7440-92-7  October 3 7440-92-7  October 4 7440-92-7  October 4 7440-92-7  October 4 7440-92-7  October 4 7440-92-7  October 5 7440-92-7  October											
Acysiate resina Proprietary   Trade Secret   Die Attach   0.274   0.515   2.736   Prosphorous   Tr24-14   0.08   Trade Organic compound   Trade Secret   Die Attach   0.030   0.057   304   2.86   (mg) Total   Die Attach   0.000   Sillicon   7440-21-3   Chip (Die)   4.220   8.004   42.00   No. 1740-21-3   Chip (Die)   4.220   8.004   42.00   No. 1740-21-3   Chip (Die)   4.220   8.004   42.00   No. 1842   Total Mass   Total Mission   Total Missi											
Trailed slace    Trailed Secret   Die Attach   0.030   0.057   304   2.86   (mg) Total   100.00											
Heterocyclic organic compound   Trade Secret   Die Attach   0.039   0.057   394   2.86   (mg) Total   New Hight   1.52						,		Phosphorous			
Silicon 7440-21-3 Chip (Die) 4.280 8.064 42,800											
Gold 7440-57-5 Wire Bond 0.480 0.480 0.480 0.3904 4.800 0.37100 0.890 37,100 0.890	Heterocyclic organic compound						2.86	(mg) Total	Die Attach	% of Total Weight	1.52
Tin								Silver	7440-22-4	78	
O.1884 g Total Mass  Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2002/95/EC (RoHS D	Gold		Wire Bond	0.480	0.904	4,800		Acrylate resins Proprietary	Trade Secret	18	
O.1884 g Total Mass emicloaductor device and its homogenous materials comply with EU Directive 2002/95/EC (Red-of-Life Vehicles (ELV) Directive). EU Directive 2002/95/EC (Red-of-Life Vehicles (ELV) Directive). EU Directive 2002/95/EC (Red-of-Life Vehicles (ELV) Directive). Europea (ELV) Directive). Event of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology por acted'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 not below the threshold of regulatory concern for any regulatory scheme world-wide.  In go compounds used by Microchip meet the UL94 Of Imamability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at NuLcom/global/eng/pages/offerings/industries/chemicals/plastics/  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 critical reasonable 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 critical reasonable in original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form because it has been complied based on the ranges provided in Material's publiers.  In information is often protected from disclosure as trade secrets and some information may not have been provided by a windown of the protected from disclosure as trade secrets and some information may not have been provided by an access that the variety will be a made information in which the packing of the variety and the variety will be a made information in which the packing of the variety and conditions of sale. These are provided in the varie	Tin	7440-31-5						Treated silica		2	
semiconductor device and its homogenous materials comply with EU Directive 2002/39/EC (RoH-G-Life Vehicles (ELV) Directive).  ### Complete			TOTALS:	100.000	188.400	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive), EU Directive), EU Directive), EU Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU  pipliance 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		0.1884	n Total Mass						Total	100.00	
remical 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 propated's knowledge and belief as of the date of this document, there is no redible reason to believe that the unavoidable impurity concentration of the chemical substance, if so not below the threshold of regulatory concern for any regulatory scheme world-wide.  In go compounds used by Microchip meet the ULJ4 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at viu.com/global/eng/pages/offerings/industries/chemicals/plastics/  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 ertain "reels" may be made from PVC plastic.  In poped Gold T440-57-5 100  In poped Gold T440-57-5 100  Doped Gold T440-57-5 100  Do	, , , ,	ria internal design controls,	supplier declarations, and /or analytical test data.			ļ	0.00	rotal (mg)	Chip (Die)	% or rotal weight	4.20
### One of the control of the contro								Doped Silicon			
Doped Gold 7440-57-5 100  Total 100.00  Tota	rporated's knowledge and belief as of the date of this do	cument, there is no credible	intentional ingredient in the semiconductor device a reason to believe that the unavoidable impurity con					Doped Silicon			
chip 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 ompleteness 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. It is information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. It is information 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 get trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  In plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour  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 (pins) - Matte Tin / annealed at 150°C for 1 hour  Microchip Semiconductor products.  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour  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 understand terms and conditions of sale. These are provided in (pins) - Matte Tin / annealed at 150°C for 1 hour  Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information in Microchip's standard terms and conditions of sale. These are provided in	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 flar	ocument, there is no credible or regulatory scheme world-w ammability standard for plass	intentional ingredient in the semiconductor device a e reason to believe that the unavoidable impurity con ride.	centration of t	he chemical su		0.90		Total	100.00	0.48
ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in neaded at 150°C for 1 annealed at 150°C for 1 hour  for chip's quotations, sales order acknowledgement, and invoices.  To provide any time becturated in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive, limited product and the provided in this dectaration. The exclusive provided in this dectaration. Th	proprated'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 flan ://ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp	ocument, there is no credible or regulatory scheme world-w ammability standard for plass s/plastics/	intentional ingredient in the semiconductor device a reason to believe that the unavoidable impurity con ride.  tics. You can access the UL iQTM family of database	es to obtain a to	ne chemical su	ubstance, if	0.90	(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.48
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)  Tin 7440-31-5 100.00  Tin 7440-31-5 100.00	rporated'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 flat //ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information eir original packing materials is true and correct to the be completeness and accuracy of data in this form because plier information is often protected from disclosure as tra- mation is provided only as estimates of the average welg	cument, there is no credible regulatory scheme world-w immability standard for plass s/plastics/ ped are made from polyvinyl in this form concerning sub- plast of its knowledge and be it has been compiled based ade secrets and some inform ght of these parts and the average the second se	intentional ingredient in the semiconductor device as reason to believe that the unavoidable impurity conside.  tics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to estances restricted by RoHS in Microchip Technolog lief, as of the date listed in this form. Microchip Tech on the ranges provided in Material Safety Data Shemation may not have been provided by subcontract everage weight of anticipated significant toxic metals	es to obtain a to b hold the pack y Incorporated mology Incorp ets provided by assemblers and	ne chemical street report at sing slip on the service of the conductor raw material draw material draw material street services.	outer box ctor devices guarantee suppliers. suppliers.	0.90	(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.48
Total 100.00	porated's knowledge and belief as of the date of this does in not below the threshold of regulatory concern for any ing compounds used by Microchip meet the UL94 V0 flat (vul.com/global/eng/pages/offerings/industries/chemicals orotective "tubes" in which the specific product is shipperetain "reels" may be made from PVC plastic. Ochip Technology Incorporated believes the information bir original packing materials is true and correct to the bir original packing materials.	cument, there is no credible or regulatory scheme world-warmability standard for plasis/plastics/ ped are made from polyvinyl in this form concerning sub- best of its knowledge and be it has been compiled based ade secrets and some inforr ight of these parts and the availals contained within silicon arranty, express or implied, and its subsidiaries are cont	intentional ingredient in the semiconductor device as reason to believe that the unavoidable impurity conside.  tics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to estances restricted by RoHS in Microchip Technolog lief, as of the date listed in this form. Microchip Tech on the ranges provided in Material Safety Data Shemation may not have been provided by subcontract everage weight of anticipated significant toxic metals devices (silicon IC) in the finished parts.	es to obtain a to be hold the pack y Incorporated nnology Incorp ets provided by assemblers and components. The ex-	est report at ing slip on the 's semiconduc orated cannot or raw material d raw material These estimate	outer box ctor devices guarantee suppliers. suppliers. su do not		(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	100.00 % of Total Weight 100 100.00	
	rporated's knowledge and belief as of the date of this doe is not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL-94 V0 flat //ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp certain "reels" may be made from PVC plastic.  ochip Technology Incorporated believes the information eir original packing materials is true and correct to the b- completeness and accuracy of data in this form because iller information is often protected from disclosure as tra mation is provided only as estimates of the average weig de trace levels of dopants, metals, and non-metal materi ochip Technology Incorporated does not provide any wa anties provided by Microchip Technology Incorporated a ochip's quotations, sales order acknowledgement, and ir ochip disclaims any duty to notify users of updates or ch rwise, suffered by users or third parties as a result of the	arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty express or implied, and its subsidiaries are contained within silicon arranty express or implied, and its subsidiaries are contained within silicon arranty express or implied, and its subsidiaries are contained within silicon arranty express or implied by the subsidiaries are contained within silicon arranty express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty, express or implied, and its subsidiaries are contained within silicon arranty express or implied, and its subsidiaries are contained within silicon arranty express or implied, and its subsidiaries are contained within silicon arranty express or implied, and its subsidiaries are contained within silicon arranty express or implied are subsidiaries are contained within silicon area.	intentional ingredient in the semiconductor device a preason to believe that the unavoidable impurity convide.  tics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to estances restricted by RoHS in Microchip Technolog lief, as of the date listed in this form. Microchip Technolog lief, as of the date listed in Material Safety Data Shenation may not have been provided by subcontract average weight of anticipated significant toxic metals devices (silicon IC) in the finished parts.  with respect to the information provided in this declarated in Microchip's standard terms and conditions.	es to obtain a to b hold the pack y Incorporated mology Incorp ets provided by assemblers and components. The ex- of sale. These	est report at ing slip on the 's semiconduc orated cannot or aw material d raw material These estimate are provided i ect, conseque	outer box ctor devices guarantee suppliers. suppliers. se do not d product n		(mg) Total  Doped Gold  (mg) Total	Wire Bond 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 100.00	

ML 44 QFN 10:15 AM : 5/6/2014

MICROCHIP  Semiconductor Device Ty	pe: HZH - HN 48	QFN 7x7x0.9 (RS/Y3)		nation Base A	•		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	70.49	(mg) Total	Mold Compound	% ot Total Weight	52.8
Silica, vitreous	60676-86-0	Mold Compound	47.124	62.911	471,240		Silica, vitreous	60676-86-0	89.25	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.047	4.067	30,466		Epoxy Resin	Trade Secret	5.77	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.492	3.327	24,922		Phenolic Resin	Trade Secret	4.72	
Carbon Black	1333-86-4	Mold Compound	0.137	0.183	1,373		Carbon Black	1333-86-4	0.26	
Copper	7440-50-8	Lead Frame	36.486	48.709	364,858			Total		
Iron	7439-89-6	Lead Frame	0.897	1.198	8,975	50.98	(mg) Total	Lead Frame	% of Total Weight	38.19
Silver	7440-22-4	Lead Frame	0.728	0.971	7,275		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.048	0.064	477		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.032	0.042	315		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.600	0.801	6,000		Zinc	7440-66-6	0.13	
Epoxy Resin	Trade secret	Die Attach	0.080	0.107	800		Phosphorous	7723-14-0	0.08	
Diluent	Trade secret	Die Attach	0.080	0.107	800			Total		
Hardener	Trade secret	Die Attach	0.040	0.053	400	1.07	(mg) Total	Die Attach	% of Total Weight	0.8
Silicon	7440-21-3	Chip (Die)	5.720	7.636	57,200		Silver	7440-22-4	75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.941	1.256	9,409		Epoxy Resin	Trade secret	10	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.029	0.039	291		Diluent	Trade secret	10	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.520	2.029	15,200		Hardener	Trade secret	5	
		TOTALS:	100.000	133.500	1,000,000			Total	100.00	
	0.1335	g Total Mass				7.64	Total (mg)	Chip (Die)	% of Total Weight	5.72
This semiconductor device and its homogenous materials comp	ly with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/	EII (DaUC Base							
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		,	EU (ROHS Reca	ast Directive)	and with EU		Doped Silicon	7440-21-3	100	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via in	nternal design control	, ,	•	ast Directive)	and with EU		Doped Silicon	7440-21-3		
, , , ,	cal substance is NOT of this document, the	is, supplier declarations, and /or analytical test da an intentional ingredient in the semiconductor de e is no credible reason to believe that the unavoic	a. vice and, to the	best of Micro	ochip	1.29	Doped Silicon  (mg) Total			0.97
Compliance with the above EU Directives has been verified via it if a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date or	cal substance is NOT of this document, the ory concern for any readility standard for place.	is, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor de re is no credible reason to believe that the unavoic egulatory scheme world-wide.	a. vice and, to the lable impurity o	best of Micro	ochip of the	1.29		Total Wire Bond palladium coated	100.00	0.97
Compliance with the above EU Directives has been verified via in f a chemical substance is absent from the list above, the chemic echnology incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regulate folding compounds used by Microchip meet the UL94 V0 flamm	cal substance is NOT of this document, ther ory concern for any re ability standard for pl astics/	is, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor de- re is no credible reason to believe that the unavoic egulatory scheme world-wide. lastics. You can access the UL iQTM family of data	ia. vice and, to the lable impurity o	best of Micro concentration	ochip of the t at	1.29	(mg) Total	Total  Wire Bond palladium coated copper (CuPd)	100.00 % of Total Weight	0.97
Compliance with the above EU Directives has been verified via in f a chemical substance is absent from the list above, the chemic fechnology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regulat folding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/place.	cal substance is NOT of this document, thei ory concern for any re lability standard for plastics/ are made from polyvia this form concerning the best of its knowle of form because it has om disclosure as trace that the standard so the average very	is, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor dere is no credible reason to believe that the unavoice gulatory scheme world-wide.  lastics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technidge and belief, as of the date listed in this form. Mobeen compiled based on the ranges provided in Microchip Technidge and some information may not have be secrets and some information may not have beveight of these parts and the average weight of an	ia.  vice and, to the lable impurity of a control of the labes to obtain the labes of the labes	best of Microconcentration  n a test repor  packing slip of  rated's semicalogy Incorporata Sheets p  subcontract a  icant toxic me	ochip of the  t at  on the outer  onductor orated rovided by assemblers stals	1.29	(mg) Total	Total Wire Bond palladium coated copper (CuPd) 7440-50-8	97 3	0.97
Compliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic rechnology Incorporated's knowledge and belief as of the date is the chemical substance, if any, is not below the threshold of regulate Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/place flow protective "tubes" in which the specific product is shipped show and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information in the levices in their original packing materials is true and correct to sannot guarantee the completeness and accuracy of data in this aw material suppliers. Supplier information is often protected fruid raw material suppliers. Information is provided only as esting the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and accuracy of data in this cannot guarantee the completeness and cannot guara	cal substance is NOT of this document, there ory concern for any reability standard for plastics/ are made from polyving this form concerning the best of its knowles form because it has om disclosure as tractates of the average vants, metals, and non onty, express or implie ted and its subsidiari	is, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor dere is no credible reason to believe that the unavoice gulatory scheme world-wide.  lastics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technidge and belief, as of the date listed in this form. Mobeen compiled based on the ranges provided in Microchip Technidge and some information may not have beveight of these parts and the average weight of animetal materials contained within silicon devices (d, with respect to the information provided in this	ta.  vice and, to the lable impurity of the labes to obtain the labes the la	best of Microconcentration  n a test repor  packing slip of  rated's semic  tology Incorporata Sheets p  subcontract a  cicant toxic me  e finished pa  ne exclusive, I	ochip of the  t at  on the outer  onductor orated rovided by assemblers stals rts.  imited	2.03	(mg) Total	Total Wire Bond palladium coated copper (CuPd)  7440-50-8  7440-05-3	97 3	0.97
Compliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic fechnology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regulate Molding compounds used by Microchip meet the UL94 V0 flamm the://ul.com/global/eng/pages/offerings/industries/chemicals/plc. The protective "tubes" in which the specific product is shipped now and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information in the levices in their original packing materials is true and correct to cannot guarantee the completeness and accuracy of data in this aw material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as esting the components. These estimates do not include trace levels of dop Microchip Technology Incorporated does not provide any warrand orduct warranties provided by Microchip Technology Incorporated microchip's quotations, sales order acknowledgement, and in Microchip disclaims any duty to notify users of updates or changtherwise, suffered by users or third parties as a result of the us	cal substance is NOT of this document, there ory concern for any re sability standard for pleastics/ are made from polyvin this form concerning: the best of its knowle form because it has om disclosure as trace that are so it the average we ants, metals, and non onty, express or implie the and its subsidiari voices.  ges to Material Conter ters' reliance on the ir	is, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor deve is no credible reason to believe that the unavoice gulatory scheme world-wide.  Iastics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Moreon been compiled based on the ranges provided in Mele secrets and some information may not have beveight of these parts and the average weight of an annetal materials contained within silicon devices (d, with respect to the information provided in this es are contained in Microchip's standard terms and Declarations and shall not be liable for any dament.	ia.  vice and, to the lable impurity of the labes to obtain the labes the labes to obtain the labes to obtain the labes the labes to obtain the labes the la	best of Microconcentration  n a test repor  packing slip of  rated's semic  sology incorpo  Data Sheets p  subcontract i  cant toxic me  e finished pa  ne exclusive, I  of sale. These  indirect, cons	ochip of the  t at  on the outer  onductor orated rovided by assemblers atals rts.  imited are provided sequential 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	97 3	
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regulat lolding compounds used by Microchip meet the UL94 V0 flammttp://ul.com/global/eng/pages/offerings/industries/chemicals/pliche protective "tubes" in which the specific product is shipped sox and certain "reels" may be made from PVC plastic.  Ilicrochip Technology Incorporated believes the information in the evices in their original packing materials is true and correct to annot guarantee the completeness and accuracy of data in this aw material suppliers. Information is often protected find raw material suppliers. Information is provided only as estin omponents. These estimates do not include trace levels of dop licrochip Technology Incorporated does not provide any warral roduct warranties provided by Microchip Technology Incorporated for the provided only microchip Technology Incorporated to the provided and the provide and the provided only microchip Technology Incorporated to the provided only microchip Technology Incorporated to the provided provided and the provided and the provided by Microchip Technology Incorporated to the provided and the provided	cal substance is NOT of this document, there ory concern for any re sability standard for pleastics/ are made from polyvin this form concerning: the best of its knowle form because it has om disclosure as trace that are so it the average we ants, metals, and non onty, express or implie the and its subsidiari voices.  ges to Material Conter ters' reliance on the ir	is, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor deve is no credible reason to believe that the unavoice gulatory scheme world-wide.  Iastics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Moreon been compiled based on the ranges provided in Mele secrets and some information may not have beveight of these parts and the average weight of an annetal materials contained within silicon devices (d, with respect to the information provided in this es are contained in Microchip's standard terms and Declarations and shall not be liable for any dament.	ia.  vice and, to the lable impurity of the labes to obtain the labes the labes to obtain the labes to obtain the labes the labes to obtain the labes the la	best of Microconcentration  n a test repor  packing slip of  rated's semic  sology incorpo  Data Sheets p  subcontract i  cant toxic me  e finished pa  ne exclusive, I  of sale. These  indirect, cons	ochip of the  t at  on the outer  onductor orated rovided by assemblers atals rts.  imited are provided sequential 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	97 3 100.00 % of Total Weight 97 100.00	

HN 10:16 AM : 5/6/2014

AICROCHIP  Semiconductor Device	Type: 64 QFN 9x9x	0.9mm (NT)		nation Base A pper Alloy (C	-		Package Homo	ogeneous Materials		JEDEC 97 Product Markin and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	Polybutadier	ne derivative & Coplolyme		7	
		TOTALS:	100.000							
		g Total Mass		232.400	1,000,000	13.94	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	6
s semiconductor device and its homogenous materials co		g Total Mass			,,	13.94	Total (mg)  Doped Silicon			6
	emply with EU Directive 20	g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/E	U (RoHS Reca		,,	13.94		Chip (Die)	% of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directive 20 ia internal design control emical substance is NOT a te of this document, ther	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 dev e is no credible reason to believe that the unavoid	U (RoHS Reca	st Directive) ar	nd with EU	2.25		Chip (Die) 7440-21-3	% of Total Weight	
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  chology incorporated's knowledge and belief as of the da	mply with EU Directive 20 ia internal design control emical substance is NOT; tte of this document, ther ulatory concern for any re mmability standard for pl.	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 dev  e is no credible reason to believe that the unavoid  egulatory scheme world-wide.	EU (RoHS Recards)  a. In the second s	st Directive) ar best of Microc oncentration o	nd with EU hip f the		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond palladium coated	% of Total Weight 100 100.00	
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 chnology incorporated's knowledge and belief as of the de mical substance, if any, is not below the threshold of regulding compounds used by Microchip meet the UL94 VO fla	mply with EU Directive 20 ia internal design control emical substance is NOT; the of this document, ther ulatory concern for any re mmability standard for pl. s/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 dev e is no credible reason to believe that the unavoid gulatory scheme world-wide. astics. You can access the UL iQTM family of datal	U (RoHS Recards)  a. tice and, to the able impurity contains	st Directive) ar best of Microc oncentration o a test report a	nd with EU hip f the		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (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 verified v chemical substance is absent from the list above, the che chnology incorporated's knowledge and belief as of the de emical substance, if any, is not below the threshold of regulding compounds used by Microchip meet the UL94 VO fla b://ul.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shipp	in internal design control in internal design control in internal design control in internal substance is NOT atte of this document, there is ulatory concern for any remanability standard for playlight in inthis form concerning in this form concerning is to the best of its knowled in because it has been con disclosure as trade seates of the average weigh	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 dev e is no credible reason to believe that the unavoid- egulatory scheme world-wide. astics. You can access the UL iQTM family of datal egyl chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Mi mpiled based on the ranges provided in Material S crets and some information may not have been pre t of these parts and the average weight of anticipa	ice and, to the able impurity consess to obtain the dot ohold the proposed for the process of the consess of the proposed for the provided by subcoted significant to the province	best of Microconcentration of a test report a acking slip on ated's semicorology Incorporets provided bontract assem toxic metals c	hip f the at the outer adductor ated cannot y raw blers and		Doped Silicon  (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	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive), impliance with the above EU Directives has been verified vehicles (ELV) Directives, impliance with the above EU Directives has been verified vehicles where the content of the describing of	in internal design control micro substance is NOT; atte of this document, ther ulatory concern for any remmability standard for playlplastics/ ed are made from polyvin in this form concerning is to the best of its knowled in because it has been com disclosure as trade se attes of the average weigh is, and non-metal materia irranty, express or implied protects.	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 dev e is no credible reason to believe that the unavoid egulatory scheme world-wide. astics. You can access the UL iQTM family of datal myl chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Technique and belief, as of the date listed in this form. Mis mpiled based on the ranges provided in Material S crets and some information may not have been pri t of these parts and the average weight of anticipa lis contained within silicon devices (silicon IC) in the d, with respect to the information provided in this of es are contained in Microchip's standard terms and	IU (RoHS Recains).  Idea and, to the able impurity consess to obtain the distribution of the policy incorport crochip Technology Incorporate Control Technology Incorp	best of Microconcentration of a test report a acking slip on ated's semicorology Incorporets provided bontract assem toxic metals c s.	hip f the at the outer adductor ated cannot y raw blers and omponents. hited re provided		Doped Silicon  (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	
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  hnology incorporated's knowledge and belief as of the de  mical substance, if any, is not below the threshold of regulation  in the compounds used by Microchip meet the UL94 V0 fla  c://ul.com/global/eng/pages/offerings/industries/chemicals  perotective "tubes" in which the specific product is shipp  and certain "reels" may be made from PVC plastic.  prochip Technology Incorporated believes the information  rices in their original packing materials is true and correct  trantee the completeness and accuracy of data in this for  terial suppliers. Supplier information is often protected fro  material suppliers. Supplier information is often protected fro  material suppliers. Information is provided only as estimates  we estimates do not include trace levels of dopants, meta- trochip Technology Incorporated does not provide any waduct warranties provided by Microchip Technology Incorp	ia internal design control ia internal design control imical substance is NOT i tte of this document, ther ulatory concern for any re immability standard for pl. s/plastics/ ed are made from polyvin in this form concerning s to the best of its knowlet in because it has been co om disclosure as trade se ates of the average weigh ls, and non-metal materia irranty, express or implied iorated and its subsidiaried i invoices.  langes to Material Contern users' reliance on the in	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 dev e is no credible reason to believe that the unavoid gulatory scheme world-wide. astics. You can access the UL iQTM family of datal anyl chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Techn due and belief, as of the date listed in this form. Mic mpiled based on the ranges provided in Material S crets and some information may not have been pro- t of these parts and the average weight of anticipa disc contained within silicon devices (silicon IC) in the d, with respect to the information provided in this of es are contained in Microchip's standard terms and at Declarations and shall not be liable for any dama	ice and, to the able impurity consess to obtain the dot hold the process of the p	best of Microconcentration of a test report a acking slip on ated's semicorology Incorpor ets provided bontract assem toxic metals c s.  e exclusive, lin sale. These au ndirect, conse	hip f the at the outer ated cannot y raw blers and omponents. hited re provided quential or	2.25	Doped Silicon  (mg) Total  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 / annealed at 150°C for	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.97

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Silica, fused   Capoxy Resin   Tapenolic Resin	AS Number 60676-86-0 Trade Secret 1333-86-4 7440-50-8 7440-31-5 7440-22-4 7440-66-6 7440-47-3 7440-22-4 Trade Secret	"Contained In" Sub-Component  Mold Compound Mold Compound Mold Compound Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame	% Total Weight 4.032 0.217 0.217 0.013 40.914	mg/part 9.370 0.505 0.505	<b>ppm</b> 40,320 2,173	10.41	(mg) Total Silica, fused	Mold Compound 60676-86-0	% ot Total Weight	e3 4.48
Silica, fused   Capoxy Resin   Tapenolic Resin	60676-86-0 Trade Secret Trade Secret 1333-86-4 7440-50-8 7440-31-5 7440-22-4 7440-66-6 7440-47-3 7440-22-4	Sub-Component  Mold Compound  Mold Compound  Mold Compound  Mold Compound  Mold Compound  Lead Frame  Lead Frame  Lead Frame  Lead Frame	Weight 4.032 0.217 0.217 0.013 40.914	9.370 0.505 0.505	40,320	10.41	Silica, fused	•		4.48
Silica, fused   Capoxy Resin   Tapenolic Resin	60676-86-0 Trade Secret Trade Secret 1333-86-4 7440-50-8 7440-31-5 7440-22-4 7440-66-6 7440-47-3 7440-22-4	Mold Compound Mold Compound Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame	0.217 0.217 0.013 40.914	9.370 0.505 0.505	40,320		,	60676-86-0		
Epoxy Resin	Trade Secret 1333-86-4 7440-50-8 7440-31-5 7440-22-4 7440-66-6 7440-47-3 7440-22-4	Mold Compound Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame	0.217 0.013 40.914	0.505	2.173				90.00	
Carbon Black   Copper	1333-86-4 7440-50-8 7440-31-5 7440-22-4 7440-66-6 7440-47-3 7440-22-4	Mold Compound Lead Frame Lead Frame Lead Frame Lead Frame Lead Frame	0.013 40.914				Epoxy Resin	Trade Secret	4.85	i
Copper   Tin   Silver   Zinc   Chromium   Silver   Silver   Zinc   Chromium   Silver   Acrylate resins Proprietary   T   Treated silica   T   Heterocyclic organic compound   T   Silicon   Silicon   T   Silicon   T   Treated   Time   Time	7440-50-8 7440-31-5 7440-22-4 7440-66-6 7440-47-3 7440-22-4	Lead Frame Lead Frame Lead Frame Lead Frame	40.914		2,173		Phenolic Resin	Trade Secret	4.85	i
Tin   Silver   Zinc   Zinc   Chromium   Silver   Zinc   Chromium   Silver   Acrylate resins Proprietary   T   Treated silica   T   Heterocyclic organic compound   T   Silicon   T   Silicon   T   Silicon   T   Tincol   T   Tincol   T   Tincol   T   Tincol   T   Tincol   T   Tincol   Tincol   T   Tincol   Ti	7440-31-5 7440-22-4 7440-66-6 7440-47-3 7440-22-4	Lead Frame Lead Frame Lead Frame		0.031	134		Carbon Black	1333-86-4	0.30	i
Silver Zinc Chromium Silver Acrylate resins Proprietary Treated silica THeterocyclic organic compound Tilicon	7440-22-4 7440-66-6 7440-47-3 7440-22-4	Lead Frame Lead Frame		95.085	409,143			Total	100.00	
Zinc	7440-66-6 7440-47-3 7440-22-4	Lead Frame	0.105	0.244	1,050	97.61	(mg) Total	Lead Frame	% of Total Weight	42
Chromium Silver Acrylate resins Proprietary Treated silica THeterocyclic organic compound TSilicon	7440-47-3 7440-22-4		0.800	1.859	8,001		Copper	7440-50-8	97.42	i
Silver Acrylate resins Proprietary T Treated silica T Heterocyclic organic compound T Silicon	7440-22-4		0.076	0.176	756		Tin	7440-31-5	0.25	i
Acrylate resins Proprietary T Treated silica T Heterocyclic organic compound T Silicon		Lead Frame	0.105	0.244	1,050		Silver	7440-22-4	1.91	i
Treated silica T Heterocyclic organic compound T Silicon		Die Attach	1.888	4.387	18,876		Zinc	7440-66-6 7440-47-3	0.18 0.25	i
Heterocyclic organic compound T Silicon		Die Attach	0.436	1.012	4,356 484		Chromium			i
Silicon	Trade Secret	Die Attach	0.048	0.112 0.112	484			Total	100.00	
	Trade Secret	Die Attach		13,944		5.62	(mg) Total	Die Attach	% of Total Weight	2.42
	7440-21-3 7440-57-5	Chip (Die) Wire Bond	6.000 0.970	2.254	60,000 9,700	Į.	Silver Acrylate resins Proprietary	7440-22-4 Trade Secret	78 18	i
	7440-37-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	44.130	102.558	441,300	i	Treated silica	Trade Secret	2	i
1111	7440-31-3	TOTALS:	100.000	232.400	1.000.000	Hotor	ocyclic organic compound	Trade Secret	2	i
	0.2224	g Total Mass	100.000	232.400	1,000,000	пецеі	ocyclic organic compound	Total	100.00	I
This semiconductor device and its homogenous materials comply with E Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal of f a chemical substance is absent from the list above, the chemical subs	design controls	s, supplier declarations, and /or analytical test data.		·		13.94	Total (mg)  Doped Silicon	7440-21-3 Total	% of Total Weight 100 100.00	6
ncorporated's knowledge and belief as of the date of this document, the any, is not below the threshold of regulatory concern for any regulatory Molding compounds used by Microchip meet the UL94 V0 flammability s http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/	scheme world	l-wide.			substance, if	2.25	(mg) Total	Wire Bond	% of Total Weight	0.97
The protective "tubes" in which the specific product is shipped are mad and certain "reels" may be made from PVC plastic.	de from polyvin	yl chloride (PVC) plastic. "Window envelopes" used to	hold the pack	king slip on th	e outer box		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in this form devices in their original packing materials is true and correct to the best guarantee the completeness and accuracy of data in this form because suppliers. Supplier information is often protected from disclosure as trasuppliers. Information is provided only as estimates of the average weig estimates do not include trace levels of dopants, metals, and non-metal	t of its knowled it has been co ade secrets and ght of these par	ge and belief, as of the date listed in this form. Microc mpiled based on the ranges provided in Material Safet a some information may not have been provided by sul rts and the average weight of anticipated significant to	hip Technolog y Data Sheets ocontract asse xic metals cor	y Incorporate provided by remblers and ra	d cannot aw material aw material			Total	100.00	
Microchip Technology Incorporated does not provide any warranty, exp warranties provided by Microchip Technology Incorporated and its subs Microchip's quotations, sales order acknowledgement, and invoices.	•			,		102.56	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	44.13
Microchip disclaims any duty to notify users of updates or changes to M otherwise, suffered by users or third parties as a result of the users' reli							Tin	7440-31-5	100.00	
or of this Certificate of Compliance for semiconductor products.								Total	100.00	

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ICROCHIP				nation Base Apper Alloy (C	- ,		Package Hom	ogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	e Type: LZY 132 DC	` '								
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	
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	
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	
		TOTALS:	100.000	102.000	1.000.000		, , , , , , , , , , , , , , , , , , , ,	Total	100.00	
miconductor device and its homogenous materials c		g Total Mass			,,	6.24	Total (mg)	Chip (Die)	% of Total Weight	6.12
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  iance with the above EU Directives has been verified verified substance is absent from the list above, the ch	omply with EU Directive 200 via internal design controls, emical substance is NOT ar	g Total Mass D2/95/EC (RoHS Directive), EU Directive 2011/65// supplier declarations, and /or analytical test date	EU (RoHS Recast.	ast Directive) a	and with EU	0.45	Total (mg)  Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper	% of Total Weight  100  100.00  % of Total Weight	0.44
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). diance with the above EU Directives has been verified we memical substance is absent from the list above, the change of the discal substance, if any, is not below the threshold of reg and compounds used by Microchip meet the UL94 V0 flaul.com/global/eng/pages/offerings/industries/chemical rotective "tubes" in which the specific product is shipp	omply with EU Directive 200 via internal design controls, emical substance is NOT at ate of this document, there julatory concern for any reg ammability standard for plass/plastics/	g Total Mass D2/95/EC (RoHS Directive), EU Directive 2011/65/h supplier declarations, and /or analytical test date in intentional ingredient in the semiconductor devis no credible reason to believe that the unavoid julatory scheme world-wide.  stics. You can access the UL iQTM family of data	EU (RoHS Rec a. rice and, to the able impurity of abases to obta	ast Directive) as best of Microconcentration in a test report	and with EU chip of the		Doped Silicon	7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98	-
semiconductor device and its homogenous materials of tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Discount of the above EU Directives has been verified whem and the above EU Directives has been verified whem are the above that the above that the above the chology Incorporated's knowledge and belief as of the discal substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 flavul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shippind certain "reels" may be made from PVC plastic. The provided only a provided only as estimates the completeness and accuracy of data in this for reial suppliers. Information is often protected from the accuracy of the provided only as estimates do not include trace levels of dopants, meterial suppliers.	omply with EU Directive 200 via internal design controls, emical substance is NOT ar ate of this document, there julatory concern for any reg ammability standard for plate s/plastics/ bed are made from polyviny in this form concerning su t to the best of its knowledg m because it has been com om disclosure as trade sec- lates of the average weight	g Total Mass  D2/95/EC (RoHS Directive), EU Directive 2011/65/l  supplier declarations, and /or analytical test dat intentional ingredient in the semiconductor dev is no credible reason to believe that the unavoid julatory scheme world-wide.  Stics. You can access the UL iQTM family of data of chloride (PVC) plastic. "Window envelopes" us betances restricted by RoHS in Microchip Techn ge and belief, as of the date listed in this form. M pilled based on the ranges provided in Material S rets and some information may not have been pr of these parts and the average weight of anticipi	EU (RoHS Rec a. rice and, to the able impurity of bases to obtated ed to hold the ology Incorpo icrochip Techr iafety Data Shroovided by sub ated significan	ast Directive) :  be best of Micro concentration in a test report packing slip o rated's semico rology incorpo cets provided i contract asset it toxic metals	chip of the  at  n the outer  anductor rated cannot by raw nblers and		Doped Silicon  (mg) Total  Copper	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)  7440-50-8	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 water and the state of the dical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 file/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipping the state of t	omply with EU Directive 200 via internal design controls, emical substance is NOT at ate of this document, there ulatory concern for any reg ammability standard for plates/plastics/ bed are made from polyviny at in this form concerning su to to the best of its knowledg m because it has been com om disclosure as trade sec nates of the average weight als, and non-metal materials arranty, express or implied, porated and its subsidiaries d invoices.	g Total Mass  D2/95/EC (RoHS Directive), EU Directive 2011/65/I  supplier declarations, and /or analytical test data intentional ingredient in the semiconductor devis no credible reason to believe that the unavoid julatory scheme world-wide.  Stics. You can access the UL iQTM family of data of chloride (PVC) plastic. "Window envelopes" us betances restricted by RoHS in Microchip Techn ge and belief, as of the date listed in this form. Mipiled based on the ranges provided in Material S rets and some information may not have been prof these parts and the average weight of anticipies contained within silicon devices (silicon IC) in the with respect to the information provided in this of a are contained in Microchip's standard terms and the series of t	EU (RoHS Rec. a ice and, to the able impurity of abases to obta ed to hold the ology Incorpo icrochip Techr afety Data She ovided significan he finished pa declaration. Ti d conditions of	ast Directive) as best of Microconcentration in a test report packing slip or rated's semiconology Incorposets provided according asset that it is not exclusive, lift sale. These assets in sale.	and with EU  chip of the  at  n the outer  enductor rated cannot by raw mblers and components.  mited are provided		Doped Silicon  (mg) Total  Copper	7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100 100.00 % of Total Weight 98	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Illiance with the above EU Directives has been verified water and the state of the dical substance is absent from the list above, the challogy Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fiz (ul.com/global/eng/pages/offerings/industries/chemical ordective "tubes" in which the specific product is shipp ind certain "reels" may be made from PVC plastic.  The prochalogy Incorporated believes the information is in their original packing materials is true and corrective the completeness and accuracy of data in this for ial suppliers. Supplier information is often protected froaterial suppliers. Information is provided only as estimaterial suppliers. Information is provided only as estimaterials uppliers. Information is provided only as estimaterials on ot include trace levels of dopants, metically information is provided only as estimated to the provided only and the provided only as estimated to the provided only and the provided only as estimated to the provided only and the provided only as estimated to the provided only and the provided only as estimated to the provided only and the provided only as estimated to the provided only and the	omply with EU Directive 200 via internal design controls, emical substance is NOT ar ate of this document, there julatory concern for any reg ammability standard for plate s/plastics/ bed are made from polyviny in this form concerning su t to the best of its knowled, m because it has been com om disclosure as trade sec julates of the average weight als, and non-metal materials arranty, express or implied, porated and its subsidiaries of invoices. hanges to Material Content te users' reliance on the infe	g Total Mass  D2/95/EC (RoHS Directive), EU Directive 2011/65/h  supplier declarations, and /or analytical test data in intentional ingredient in the semiconductor devision ocredible reason to believe that the unavoid pulatory scheme world-wide.  Stics. You can access the UL iQTM family of data of chloride (PVC) plastic. "Window envelopes" us bestances restricted by RoHS in Microchip Techn ge and belief, as of the date listed in this form. M pilled based on the ranges provided in Material S rets and some information may not have been profithes parts and the average weight of anticips is contained within silicon devices (silicon IC) in t with respect to the information provided in this is are contained in Microchip's standard terms an Declarations and shall not be liable for any dame	EU (RoHS Rec.  a.  vice and, to the able impurity of abbases to obtained to hold the cology Incorposition of the c	ast Directive) as best of Microconcentration in a test report packing slip of rated's semiconology Incorposets provided lacontract asset toxic metals rts.  The exclusive, lip of sale. These as indirect, considered, conside	chip of the  at  n the outer  onductor rated cannot by raw nblers and components.  mited are provided equential or	0.45	Copper Palladium	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	100 100.00 % of Total Weight 98 2	0.44

LZY 132 DQFN 10:17 AM: 5/6/2014

MICROCHIP				nation Base opper Alloy (			•	ogeneous Materials: e.g. pc boards, displays	s)	JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: QU6E 06 (Lead) UC	* *								
		"Contained In"	% Total			1.36	(mg) Total	Mold Compound	% ot Total Weight	20.25
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		,			
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		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	0.982	0.066	9,821		Phenolic Resin	Trade Secret	4.85	
Carbon Black Copper	1333-86-4 7440-50-8	Mold Compound Lead Frame	0.061 69.935	0.004 4.686	608 699.355		Carbon Black	1333-86-4	0.30	
Nickel	7440-02-0	Lead Frame	1.865	0.125	18.651	4.92	(mg) Total	Total Lead Frame	% of Total Weight	73.43
Silicon	7440-02-0	Lead Frame	0.330	0.125	3.304	4.92				73.43
							Copper	7440-50-8	95.24	
Magnesium Silver	7439-95-4 7440-22-4	Lead Frame Lead Frame	0.073	0.005 0.082	734		Nickel Silicon	7440-02-0	2.54 0.45	
	7440-22-4	Die Attach	1.226 1.710	0.082	12,255 17,100		Magnesium	7440-21-3 7439-95-4	0.45	
Ag			0.342	0.115					1.67	
Epoxy resin	Trade secret	Die Attach			3,420		Silver	7440-22-4 Total		
Aliphatic anhydride	Trade secret	Die Attach	0.114	0.008	1,140				100.00	
2-Butoxyethyl acetate	112-07-2	Die Attach	0.057	0.004	570	0.15	(mg) Total	Die Attach	% of Total Weight	2.28
Polymeric material	Trade secret	Die Attach	0.057	0.004	570		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 <b>100.000</b>	0.092 <b>6.700</b>	13,800 <b>1.000.000</b>		2-Butoxyethyl acetate	112-07-2 Trade secret	2.50	
		TOTALS:	100.000	6.700	1,000,000		Polymeric material	Trade secret	100.00	
	0.0067 g To							Total	100.00	
semiconductor device and its homogenous materials comp	ply with EU Directive 2002/95/EC	C (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Di	irective) and v	vith EU					
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).				•		0.14	(mg) Total	Chip (Die)	% of Total Weight	2.12
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Incliance with the above EU Directives has been verified via	internal design controls, supplie	er declarations, and /or analytical test data.		ŕ		0.14	- T	1 , , ,		2.12
pliance with the above EU Directives has been verified via		•		·	-	0.14	(mg) Total  GaAs	1303-00-0	100	
pliance with the above EU Directives has been verified via nemical substance is absent from the list above, the chemi porated's knowledge and belief as of the date of this docu	ical substance is NOT an intenti ment, there is no credible reason	onal ingredient in the semiconductor device and	d, to the best	of Microchip	Technology	0.14	- T	1 , , ,		
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poliance with the above EU Directives has been verified via the mical substance is absent from the list above, the chemi- porated's knowledge and belief as of the date of this docus is not below the threshold of regulatory concern for any resing compounds used by Microchip meet the UL94 V0 flamm/ul.com/global/eng/pages/offerings/industries/chemicals/piorotective "tubes" in which the specific product is shipped erertain "reels" may be made from PVC plastic.  The product of the best or product to the best or product to the best or product and accuracy of data in this form because it lier information is often protected from disclosure as tradition is provided only as estimates of the average weight detrace levels of dopants, metals, and non-metal materials ochip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated and ochip's quotations, sales order acknowledgement, and involucing is quotations, sales order acknowledgement, and involucing incorporates as a result of the use of supplements.	ical substance is NOT an intentiment, there is no credible reasor gulatory scheme world-wide.  mability standard for plastics. You lastics/ I are made from polyvinyl chloric this form concerning substance to fits knowledge and belief, as has been compiled based on the esecrets and some information to fithese parts and the average is contained within silicon device anty, express or implied, with rest its subsidiaries are contained is oices.  Inges to Material Content Declara issers' reliance on the information.	onal ingredient in the semiconductor device and to believe that the unavoidable impurity concern to believe that the unavoidable impurity concern to be used to be us	d, to the best entration of the to obtain a tended the pack. Incorporated ology Incorporated services and omponents. The exert falle. These direct or indirect or	of Microchip ne chemical s est report at ing slip on the s semicondu- prated cannot raw material f raw material These estimat clusive, limite are provided i	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. es do not d product in ential or	0.04	GaAs  (mg) Total  Doped Gold	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	0.54
pliance with the above EU Directives has been verified via inemical substance is absent from the list above, the chemiporated's knowledge and belief as of the date of this docurs not below the threshold of regulatory concern for any reing compounds used by Microchip meet the UL94 V0 flammul.com/global/eng/pages/offerings/industries/chemicals/piorotective "tubes" in which the specific product is shipped ertain "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information in ir original packing materials is true and correct to the best ompleteness and accuracy of data in this form because it lier information is often protected from disclosure as tradiation is provided only as estimates of the average weight de trace levels of dopants, metals, and non-metal materials chip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated and chip's quotations, sales order acknowledgement, and invochip disclaims any duty to notify users of updates or charwise, suffered by users or third parties as a result of the users.	ical substance is NOT an intentiment, there is no credible reasor gulatory scheme world-wide.  mability standard for plastics. You lastics/ I are made from polyvinyl chloric this form concerning substance to fits knowledge and belief, as has been compiled based on the esecrets and some information to fithese parts and the average is contained within silicon device anty, express or implied, with rest its subsidiaries are contained is oices.  Inges to Material Content Declara issers' reliance on the information.	onal ingredient in the semiconductor device and to believe that the unavoidable impurity concern to believe that the unavoidable impurity concern to be used to be us	d, to the best entration of the to obtain a tended the pack. Incorporated ology Incorporated services and omponents. The exert falle. These direct or indirect or	of Microchip ne chemical s est report at ing slip on the s semicondu- prated cannot raw material f raw material These estimat clusive, limite are provided i	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. es do not d product in ential or	0.04	GaAs  (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	100 100.00 % of Total Weight 100.00 % of Total Weight	0.54
pliance with the above EU Directives has been verified via hemical substance is absent from the list above, the chemi-porated's knowledge and belief as of the date of this docuis not below the threshold of regulatory concern for any reing compounds used by Microchip meet the UL94 V0 flamm/ful.com/global/eng/pages/offerings/industries/chemicals/plorotective "tubes" in which the specific product is shipped certain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information in eir original packing materials is true and correct to the best ompleteness and accuracy of data in this form because it I olier 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 occhip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated and ochip's quotations, sales order acknowledgement, and invo	ical substance is NOT an intentiment, there is no credible reasor gulatory scheme world-wide.  mability standard for plastics. You lastics/ I are made from polyvinyl chloric this form concerning substance to fits knowledge and belief, as has been compiled based on the esecrets and some information to fithese parts and the average is contained within silicon device anty, express or implied, with rest its subsidiaries are contained is oices.  Inges to Material Content Declara issers' reliance on the information.	onal ingredient in the semiconductor device and to believe that the unavoidable impurity concern to believe that the unavoidable impurity concern to be used to be us	d, to the best entration of the to obtain a tended the pack. Incorporated ology Incorporated services and omponents. The exert falle. These direct or indirect or	of Microchip ne chemical s est report at ing slip on the s semicondu- prated cannot raw material f raw material These estimat clusive, limite are provided i	Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. es do not d product in ential or	0.04	GaAs  (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	100 100.00 % of Total Weight 100.00 % of Total Weight 100.00	0.54

QU6E 06-UQFN 10:17 AM: 5/6/2014

MICROCHIP  Semiconductor Device	e Tyne: NA 10 UDF	N 3y3y05mm (RB)		nation Base opper Alloy (0			•	ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Ocimiconductor Device	c Type. ItA 10 0DI	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	4.02	(mg) Total	Mold Compound	% ot 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		
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	7440-22-4	Die Attach	2.200	0.260	21,996		Magnesium	7439-95-4	0.10	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.508	0.060	5,076		Silver	7440-22-4	1.67	
Treated silica	Trade Secret	Die Attach	0.056	0.007	564			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.056	0.007	564	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	Wire Bond	1.060	0.125	10,600		Acrylate resins Proprietary	Trade Secret	18.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.140	0.253	21,400		Treated silica	Trade Secret	2.00	
	•	TOTALS:	100.000	11.800	1,000,000	Hete	rocyclic organic compound	Trade Secret	2.00	
	0.0118	g Total Mass						Total	100.00	
		<u> </u>	oHS Recast	Directive) and	d with EU	1.70	(mg) Total	Total Chip (Die)	100.00 % of Total Weight	14.37
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified	omply with EU Directive 20 via internal design controls	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ros, supplier declarations, and /or analytical test data.				1.70	(mg) Total  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	14.37
ective 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 chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of reg	omply with EU Directive 20 via internal design controls emical substance is NOT a ate of this document, there gulatory concern for any re	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ros, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device as is no credible reason to believe that the unavoidable gulatory scheme world-wide.	nd, to the be impurity con	est of Microch acentration of	ip the	1.70		Chip (Die)	% of Total Weight	14.37
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified on chemical substance is absent from the list above, the che chnology Incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regulding compounds used by Microchip meet the UL94 V0 flicks.	omply with EU Directive 20 via internal design controls emical substance is NOT a late of this document, there gulatory concern for any re ammability standard for pla	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ros, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device as is no credible reason to believe that the unavoidable gulatory scheme world-wide.	nd, to the be impurity con	est of Microch acentration of	ip the	0.13		Chip (Die) 7440-21-3	% of Total Weight	14.37
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified to  the chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regolding compounds used by Microchip meet the UL94 V0 flap://ul.com/global/eng/pages/offerings/industries/chemical  the protective "tubes" in which the specific product is shipper the substance of the specific product is shipper the substance of the specific product is shipper the substance of the substan	omply with EU Directive 20 via internal design controls emical substance is NOT a late of this document, there gulatory concern for any re ammability standard for pla is/plastics/	OZO/295/EC (RoHS Directive), EU Directive 2011/65/EU (Ros, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device as is no credible reason to believe that the unavoidable gulatory scheme world-wide.  Institute: You can access the UL iQTM family of database	ind, to the be impurity con s to obtain a	est of Microch centration of test report at	ip the		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00  % of Total Weight 100.00	
is semiconductor device and its homogenous materials of rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Ompliance with the above EU Directives has been verified to a chemical substance is absent from the list above, the chachnology Incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regolding compounds used by Microchip meet the UL94 V0 fit is perfuencive "tubes" in which the specific product is ship ax and certain "reels" may be made from PVC plastic. Corochip Technology Incorporated believes the information vices in their original packing materials is true and correctivate in the completeness and accuracy of data in this for a terial suppliers. Supplier information is often protected from waterial suppliers. Information is provided only as estim waterial suppliers. Information is provided only as estim tese estimates do not include trace levels of dopants, met.	omply with EU Directive 20 via internal design controls emical substance is NOT a late of this document, there julatory concern for any re ammability standard for pla is/plastics/ ped are made from polyving in in this form concerning si t to the best of its knowled rm because it has been co om disclosure as trade see nates of the average weight	102/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), and /or analytical test data. In intentional ingredient in the semiconductor device a e is no credible reason to believe that the unavoidable gulatory scheme world-wide.  10 astics. You can access the UL iQTM family of database yl chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technolog ige and belief, as of the date listed in this form. Microc mpiled based on the ranges provided in Material Safet; crets and some information may not have been provide tof these parts and the average weight of anticipated is	and, to the be impurity con s to obtain a hold the pac y Incorporate hip Technolo y Data Sheets do by subcos significant to	est of Microch icentration of test report at cking slip on t ed's semicono ogy Incorpora sprovided by tract assemb xic metals co	ip the the outer ductor ted cannot rraw olers and		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight  100  100.00  % of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified to a chemical substance is absent from the list above, the chicknology Incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regolding compounds used by Microchip meet the UL94 V0 flatp://ul.com/global/eng/pages/offerings/industries/chemical are protective "tubes" in which the specific product is ship to and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information vices in their original packing materials is true and correctarantee the completeness and accuracy of data in this for aterial suppliers. Supplier information is often protected from waterial suppliers. Supplier information is provided only as estimaterial suppliers.	omply with EU Directive 20 via internal design controls emical substance is NOT a late of this document, there gulatory concern for any re ammability standard for pla is/plastics/ ped are made from polyving in in this form concerning si to the best of its knowled rm because it has been cor om disclosure as trade sec nates of the average weight als, and non-metal material arranty, express or implied and its subsidiaries are co	102/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), and /or analytical test data.  The is no credible reason to believe that the unavoidable gulatory scheme world-wide.  The issuits and access the UL iQTM family of database of the control of the con	and, to the be impurity con s to obtain a hold the pact y Incorporate hip Technold y Data Sheet: ad by subcorsignificant to nished parts.	est of Microch icentration of test report at cking slip on t ed's semicone gy Incorpora s provided by intract assemb xic metals co	ip the the outer ductor ted cannot rraw elers and mponents.		Doped Silicon  (mg) Total  Gold	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).  npliance with the above EU Directives has been verified or  chemical substance is absent from the list above, the ch  hnology Incorporated's knowledge and belief as of the  dirical substance, if any, is not below the threshold of reg  ding compounds used by Microchip meet the UL94 V0 flix: //ul.com/global/eng/pages/offerings/industries/chemical  protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.  rochip Technology Incorporated believes the information  ices in their original packing materials is true and correct  rantee the completeness and accuracy of data in this for  erial suppliers. Supplier information is often protected from  material suppliers. Information is provided only as estir  se estimates do not include trace levels of dopants, met- rocchip Technology Incorporated does not provide any we  ranties provided by Microchip Technology Incorporated	omply with EU Directive 20 via internal design controls emical substance is NOT a ate of this document, there julatory concern for any re ammability standard for pla is/plastics/ ped are made from polyvim in this form concerning si t to the best of its knowled trm because it has been cor om disclosure as trade sec nates of the average weight als, and non-metal material arranty, express or implied and its subsidiaries are co invoices. hanges to Material Content e users' reliance on the int	Dic/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), and for analytical test data. In intentional ingredient in the semiconductor device a le is no credible reason to believe that the unavoidable gulatory scheme world-wide.  Districtive (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technolog (ge and belief, as of the date listed in this form. Microcmpiled based on the ranges provided in Material Safetycrets and some information may not have been provided to fthese parts and the average weight of anticipated is contained within silicon devices (silicon IC) in the first, with respect to the information provided in this declantained in Microchip's standard terms and conditions to Declarations and shall not be liable for any damages.	and, to the be impurity con s to obtain a hold the pace y Incorporate hip Technolo y Data Sheets ed by subcor significant to nished parts. aration. The e of sale. Thes	est of Microch icentration of test report at cking slip on t ed's semicono ogy Incorpora s provided by ntract assemb xic metals co	ip the outer ductor ted cannot raw elers and mponents. ted product id in	0.13	Doped Silicon  (mg) Total  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	% of Total Weight 100 100.00  % of Total Weight 100.00 100.00	1.06

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AICROCHIP  Semiconductor Device	e Type: QUBE 12 0	Lead) UQFN 2x2x0.55mm (QM)		nation Base opper Alloy (	•		•	ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Sommodiadata Barra	0 1 ypo. QOBE 12 (	"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	y 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	1	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	0	Silver	7440-22-4	80.00	2.02
1111	7440010	TOTALS:		5.100	1.000.000		Epoxy Resin	Trade secret	20.00	
	0.0054	q Total Mass	100.000	0.100	1,000,000		Ероху Пезін	Total	100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	).	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ols, supplier declarations, and /or analytical test data.	(RoHS Reca	st Directive) a	and with EU	0.73 Doped GaAs	(mg) Total GaAs	Chip (Die) 1303-00-0	% of Total Weight	14.37
s semiconductor device and its floringerious materials ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance with the above EU Directives has been verified chemical substance is absent from the list above, the chology incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of re-	).  d via internal design contro  chemical substance is NOT  date of this document, the	ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidab	and, to the	best of Micro	chip			,		14.37
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 or chnology incorporated's knowledge and belief as of the	).  d via internal design controchemical substance is NOT date of this document, the egulatory concern for any offammability standard for p	ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab regulatory scheme world-wide.	e and, to the	best of Micro oncentration	chip of the	Doped GaAs		1303-00-0	100	14.37
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 of  chnology Incorporated's knowledge and belief as of the  emical substance, if any, is not below the threshold of re- lding compounds used by Microchip meet the UL94 VO	).  d via internal design controchemical substance is NOT date of this document, the egulatory concern for any offlammability standard for pals/plastics/	ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidab regulatory scheme world-wide.  plastics. You can access the UL iQTM family of databa	e and, to the le impurity co	best of Micro oncentration	chip of the : at	Doped GaAs	GaAs	1303-00-0  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive)  impliance with the above EU Directives has been verified  chemical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the  emical substance, if any, is not below the threshold of re  Idling compounds used by Microchip meet the UL94 V0  inc.//ul.com/global/eng/pages/offerings/industries/chemic  protective "tubes" in which the specific product is shi	d via internal design control chemical substance is NOT date of this document, the egulatory concern for any it flammability standard for p cals/plastics/ ipped are made from polyvi on in this form concerning ect to the best of its knowle in this form because it has cted from disclosure as tra s estimates of the average	ols, supplier declarations, and /or analytical test data.  Tan intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab regulatory scheme world-wide.  Dlastics. You can access the UL iQTM family of databa inyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technoledge and belief, as of the date listed in this form. Microbeen compiled based on the ranges provided in Mate de secrets and some information may not have been weight of these parts and the average weight of antici	e and, to the le impurity consess to obtain to hold the popy Incorpor- cochip Techno- rial Safety D provided by sepated signific	best of Micro oncentration a a test report packing slip o ated's semico plogy Incorpo ata Sheets pr subcontract a cant toxic me	chip of the at in the outer conductor orated ovided by ussemblers tals	Doped GaAs	GaAs (mg) Total	1303-00-0 Total Wire Bond	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive)  impliance with the above EU Directives has been verified  chemical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the  emical substance, if any, is not below the threshold of re- lding compounds used by Microchip meet the UL94 V0  ic.//ul.com/global/eng/pages/offerings/industries/chemic  e protective "tubes" in which the specific product is shight  and certain "reels" may be made from PVC plastic.  errochip Technology Incorporated believes the information  increase in their original packing materials is true and corre- mont guarantee the completeness and accuracy of data  material suppliers. Information is often protect  of raw material suppliers. Information is provided only as	d via internal design control chemical substance is NOT date of this document, the egulatory concern for any if flammability standard for p cals/plastics/ ipped are made from polyvi on in this form concerning ect to the best of its knowle in this form because it has cted from disclosure as tra- s estimates of the average of dopants, metals, and nor warranty, express or implie orporated and its subsidiar	ols, supplier declarations, and /or analytical test data.  Tan intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidab regulatory scheme world-wide.  Diastics. You can access the UL iQTM family of databa inyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technologie and belief, as of the date listed in this form. Microchip to been compiled based on the ranges provided in Microchip de secrets and some information may not have been pweight of these parts and the average weight of anticin-metal materials contained within silicon devices (siliced, with respect to the information provided in this detection.	e and, to the le impurity or ses to obtain to hold the population of the population	best of Micro oncentration a a test report backing slip o ated's semico logy Incorpo ata Sheets pr subcontract a cant toxic me e finished par e exclusive, li	chip of the  at on the outer conductor orated rovided by ssemblers tals ts. imited	Doped GaAs  0.05	GaAs (mg) Total  Doped Gold	1303-00-0  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance with the above EU Directives has been verified chemical substance is absent from the list above, the ochnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of relating to the emical substance, if any, is not below the threshold of relating compounds used by Microchip meet the UL94 Vo.://ul.com/global/eng/pages/offerings/industries/chemic aprotective "tubes" in which the specific product is ship and cartain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the informationic is in their original packing materials is true and corresponding to the protective of the protective in the protective ind	d via internal design control chemical substance is NOT date of this document, the egulatory concern for any of flammability standard for pals/plastics/ pped are made from polyvion in this form concerning ext to the best of its knowle in this form because it has cted from disclosure as tracestimates of the average of dopants, metals, and not warranty, express or implicorporated and its subsidiar ignement, and invoices.  changes to Material Contet the users' reliance on the i	ols, supplier declarations, and /or analytical test data.  Tan intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidab regulatory scheme world-wide.  Plastics. You can access the UL iQTM family of databating children of the company of the co	e and, to the le impurity consess to obtain to hold the properties of the properties	best of Micro oncentration  a test report  backing slip o  ated's semico  ology Incorpo  ata Sheets pr  subcontract a  cant toxic me  e finished par  e exclusive, li  sale. These a	chip of the  at at at the outer onductor orated ovided by issemblers tals tals tals tals tals tals tals tal	0.05	GaAs  (mg) Total  Doped Gold	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 100.00	1.06
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) apliance with the above EU Directives has been verified the properties of the properties of the mical substance is absent from the list above, the connology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of red ting compounds used by Microchip meet the UL94 Vol. (Incom/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Toochip Technology Incorporated believes the informatic ces in their original packing materials is true and correct guarantee the completeness and accuracy of data material suppliers. Supplier information is provided only as ponents. These estimates do not include trace levels of which we have been concluded in Microchip's quotations, sales order acknowled onchip disclaims any duty to notify users of updates or third parties as a result of the suppliers and results of the parties as a result of the parties as a r	d via internal design control chemical substance is NOT date of this document, the egulatory concern for any of flammability standard for pals/plastics/ pped are made from polyvion in this form concerning ext to the best of its knowle in this form because it has cted from disclosure as tracestimates of the average of dopants, metals, and not warranty, express or implicorporated and its subsidiar ignement, and invoices.  changes to Material Contet the users' reliance on the i	ols, supplier declarations, and /or analytical test data.  Tan intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidab regulatory scheme world-wide.  Plastics. You can access the UL iQTM family of databating children of the company of the co	e and, to the le impurity consess to obtain to hold the properties of the properties	best of Micro oncentration  a test report  backing slip o  ated's semico  ology Incorpo  ata Sheets pr  subcontract a  cant toxic me  e finished par  e exclusive, li  sale. These a	chip of the  at at at the outer onductor orated ovided by issemblers tals tals tals tals tals tals tals tal	0.05	GaAs  (mg) Total  Doped Gold  (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 % of Total Weight	1.06

QUBE 12 X2QFN 10:17 AM : 5/6/2014

ICROCHIP  Semiconductor Devic	e Type: QUCE 16 (ւ	ead) UQFN/XDFN 3x3x0.45mm (QR)		nation Base oper Alloy (C	•		•	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	% Fotal Weight	malnort	nnm	10.61	(mg) Total	Mold Compound	% ot Total Weight	51.99
Silica, fused	60676-86-0	Mold Compound	46.791	mg/part 9.545	<b>ppm</b> 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	90.00 4.85	
Phenolic Resin	Trade Secret	Mold Compound  Mold Compound	2.522	0.514	25,215	ł	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		Oarbort black	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	0.49		7440-50-8	95.24	41.01
Magnesium	7439-95-4	Lead Frame	0.042	0.038	416		Copper Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.694	0.008	6.945		Silicon	7440-02-0	2.54 0.45	
Silver	7440-22-4	Die Attach	0.632	0.142	6,320		Magnesium	7439-95-4	0.45	
Epoxy Resin	Trade secret	Die Attach	0.032	0.129	1,580		Silver	7439-95-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.170	0.443	21.700		Sliver	Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.490	0.443	4.900		/ \ <del>=</del> / ·			
1					1	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	
								Total	100.00	
		g Total Mass						Total		
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive 20	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs	S Recast Dire	ective) and wi	th EU	0.44	(mg) Total	Chip (Die)	% of Total Weight	2.17
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified	omply with EU Directive 20	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs		ŕ		0.44 Doped GaAs	(mg) Total  Gallium arsenide	1	% of Total Weight 100 100.00	2.17
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Iliance with the above EU Directives has been verified  memical substance is absent from the list above, the choorated's knowledge and belief as of the date of this d  s not below the threshold of regulatory concern for an	omply with EU Directive 20 via internal design controls emical substance is NOT a coument, there is no credib y regulatory scheme world- ammability standard for pla	002/95/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, sole reason to believe that the unavoidable impurity concen	to the best o	f Microchip T chemical su	echnology		1	Chip (Die) 1303-00-0	100	
tive 2002/53/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 cloorated's knowledge and belief as of the date of this d  s not below the threshold of regulatory concern for an  ng compounds used by Microchip meet the UL94 V0 f  'ul.com/global/eng/pages/offerings/industries/chemica	omply with EU Directive 20 via internal design controls emical substance is NOT a ocument, there is no credib y regulatory scheme world- ammability standard for pla is/plastics/	002/95/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, ble reason to believe that the unavoidable impurity concenwide.	to the best ontration of the	f Microchip T chemical su t report at	echnology bstance, if	Doped GaAs	Gallium arsenide	Chip (Die) 1303-00-0 Total	100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). oliance with the above EU Directives has been verified memical substance is absent from the list above, the character's knowledge and belief as of the date of this dis not below the threshold of regulatory concern for an ang compounds used by Microchip meet the UL94 V0 ful.com/global/eng/pages/offerings/industries/chemica rotective "tubes" in which the specific product is ship ertain "reels" may be made from PVC plastic.	omply with EU Directive 20 via internal design controls emical substance is NOT a ocument, there is no credib y regulatory scheme world- ammability standard for pla is/plastics/ ped are made from polyvin	302/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and, ole reason to believe that the unavoidable impurity concentwide.  astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to ho	to the best o ntration of the o obtain a tes	f Microchip T chemical su t report at g slip on the	echnology bstance, if outer box	Doped GaAs	Gallium arsenide  (mg) Total	Chip (Die) 1303-00-0 Total Wire Bond	100 100.00 % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified  the semical substance is absent from the list above, the character'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 from  the semiconding of the semicondin	omply with EU Directive 20 via internal design controls emical substance is NOT a ocument, there is no credib y regulatory scheme world- ammability standard for pla is/plastics/ ped are made from polyvin n in this form concerning s oest of its knowledge and b it has been compiled base rade secrets and some info ight of these parts and the	302/95/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 concentwide.  astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to how the standard of the data listed in this form. Microchip Technology In the lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets promation may not have been provided by subcontract asses average weight of anticipated significant toxic metals con	to the best on tration of the obtain a test old the packin accorporated's ogy Incorporation of the object of the o	f Microchip T chemical su t report at g slip on the semiconduc ated cannot g aw material s aw material s	echnology bstance, if outer box tor devices juarantee juppliers.	Doped GaAs	Gallium arsenide  (mg) Total	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
tive 2002/53/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 chorated'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 from  compounds used by Microchip meet the UL94 V0 from  compounds used by Microchip meet the UL94 V0 from  compounds used by Microchip meet the UL94 V0 from  conceptive "tubes" in which the specific product is ship  ertain "reels" may be made from PVC plastic.  Chip Technology Incorporated believes the information  ir original packing materials is true and correct to the  completeness and accuracy of data in this form becaus  in information is often protected from disclosure as in  antion is provided only as estimates of the average we  the trace levels of dopants, metals, and non-metal mate  chip Technology Incorporated does not provide any we	omply with EU Directive 20 via internal design controls emical substance is NOT a coument, there is no credib by regulatory scheme world- ammability standard for pla is/plastics/ ped are made from polyvin in in this form concerning s 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 silicc arranty, express or implied and its subsidiaries are co	302/95/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 concentwide.  astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to how the standard of the data listed in this form. Microchip Technology In the lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets promation may not have been provided by subcontract asses average weight of anticipated significant toxic metals con	to the best o ntration of the coobtain a tes old the packin accrporated's ogy Incorporated's orgy Incorporated by re mblers and re inponents. The	f Microchip T chemical su t report at g slip on the semiconducated cannot g aw material s aw material s ese estimate	echnology bstance, if outer box tor devices juarantee uppliers. is do not product	Doped GaAs	Gallium arsenide  (mg) Total	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.49
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified  the semical substance is absent from the list above, the character'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 from  the com/global/eng/pages/offerings/industries/chemica  rotective "tubes" in which the specific product is ship  ertain "reels" may be made from PVC plastic.  chip Technology Incorporated believes the informatio  ir original packing materials is true and correct to the  mapleteness and accuracy of data in this form becaus  lier information is often protected from disclosure as to  nation is provided only as estimates of the average we  te trace levels of dopants, metals, and non-metal mate  chip Technology Incorporated does not provide any w  nties provided by Microchip Technology Incorporated  chip's quotations, sales order acknowledgement, and  chip disclaims any duty to notify users of updates or  under the control of the control of the control of  the provided of the control of the control of  provided by Microchip Technology Incorporated  chip's quotations, sales order acknowledgement, and  chip disclaims any duty to notify users of updates or  under the control of the control of  the c	omply with EU Directive 20 via internal design controls emical substance is NOT a coument, there is no credib y regulatory scheme world ammability standard for pla ls/plastics/ ped are made from polyvin in in this form concerning s poest of its knowledge and it is thas 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.  changes to Material Conten te users' reliance on the inf	302/95/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 concentwide.  astics. You can access the UL iQTM family of databases to yl chloride (PVC) plastic. "Window envelopes" used to how the state of the date listed in this form. Microchip Technology In selief, as of the date listed in this form. Microchip Technology or the date listed in this form. Microchip Technology in the selief, as of the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form. Microchip Technology in the date listed in this form to the angles provided by subcontract asses average weight of anticipated significant toxic metals control devices (silicon IC) in the finished parts.	to the best of the	f Microchip T chemical su t report at g slip on the semiconducated cannot g aw material s ese estimate: usive, limited e provided in t, consequen	echnology bstance, if outer box tor devices juarantee juppliers. s do not product	Doped GaAs  0.10	Gallium arsenide  (mg) Total  Doped Gold	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	100 100.00 % of Total Weight 100.00	0.49

QUCE 16 UQFN\_XDFN 10:18 AM : 5/6/2014

Basic Substance   CAS Number   Contained in   % Total   mg/part   ppm   10.59   (mg) Total   Mold Compound   % of Total Weight   51.57	MICROCHIP	7 Turne 02D5 00 m m l	IOTAL (OD)		ination Base opper Alloy				nogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance CAS Number Sub-Component Weight mg/part ppm (16.79 (mg) Total Modi Compound \$4.517 (mg) Fam (Ng) Fe 500,035-5) (mg) Fem (Ng) F 500,035-5) (mg) F 500,	Semiconductor Devic	E Type: Q3DE 20 (Lead) (	` '								es
Espering Name 1	Pacic Substance	CAS Number			malnart	nnm	10.59	(mg) Total	Mold Compound	% ot Total Weight	51.57
Epow Reson IRLP # 500033-5.0   Time Secret   Mold Compound   2,501   0,513   2,501   0,513   2,501   0,513   2,501   0,513   2,501   0,513   2,501   0,513   2,501   0,513   2,501   0,513   2,501   0,513   2,501   0,513   0			•					Silica fuend	60676-86-0	90.00	1
Principle Resin   Trade Secret   Model Compound   2.501   5.513   55.011   Carbon Black   1333-644   Model Compound   0.156   0.032   1.547   Silver   7440-02-0   1.646   7480-02-0   1.646   1.056   0.032   1.547   Silver   7440-02-1   1.646   1.646   1.646   1.056   1.056   1.056   Magnetium   7430-02-0   1.646   1.646   1.646   1.056   1.056   1.056   Silver   7440-02-1   1.646   1.056   1.056   1.056   1.056   1.056   Silver   7440-02-1   1.056   1.056   1.056   1.056   1.056   1.056   1.056   1.056   Silver   7440-02-1   1.056											
Carbon Black											
Copper 7440-50-8 Laad Frame 1,055 0,219 10,045 8.89 (mg1 Total Lead Frame 1,055 0,219 10,045 10,											
Nickel 7440-52-0 Lead Frame 1,085 0.219 10,545 8.50 Image											ı
Silver   7440-22-4   Lead Frame   0.689   0.144   6.995   Silver   7440-21-3   Lead Frame   0.199   0.195   1.865   Magnesium   7430-21-4   Lead Frame   0.199   0.195   1.865   Epoxy Rein   1740-22-4   1.50   Silver   7440-22-4   1.50   Silver   7440-21-3   Chip (Dis)   0.446   2.150   0.448   2.150   Diped Gold   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   1.50   1.50   1.50   The   7440-21-5   Poly Rein   1.50   The   7440-21-5   P							8 60	(mg) Total			41 91
Silicon   7440-21-3   Lead Frame   0.189   0.039   1,886   Negression   7459-54-54   Lead Frame   0.042   0.096   419   New Year   7440-22-4   De Attach   0.866   0.135   0.590   New Year   7440-22-4   De Attach   0.866   0.135   0.590   New Year   7440-22-4   0.65   New Year   7440-22-4   De Attach   0.866   0.135   0.590   New Year   7440-22-4   0.65   New Year   7440-2-4	Silver						0.00				11101
Migrossium   7439-95-4   Lead Frame   0.042   0.009   419   Silver   7440-22-4   1.67   Mappenium   7439-95-4   1.67   Mappenium   7439-95-4   0.10   Mappe											
Silver   7440-22-4   Die Attach   0.656   0.135   6.560   Magnesium   7439-854   0.10   1.00											
Epoxy Resim Trade secret De Attach Old 4 0.034 1,840 Silcon 7440-21-3 Chip (Die) 2.180 0.48 2,1800 0.498 2,18											
Silicon 7440:21-3 Chip (Die) 2.180 0.448 21,800 0.70 (mg) Total Die Attach V. of Total Weight 0.82 Tin 17440:31-5 Pargo neterors what press - Main Tin / avorated at 1970: between 0.530 0.109 5.300 0.17 (mg) Total Die Attach V. of Total Weight 0.82 0.82 0.82 0.82 0.83 0.109 0.109 0.10											
Doped Gold 7440-57-5 Wine Bond 10-530 0.09 5.300 0.09 5.300 0.01 Picture 10-10-10-10-10-10-10-10-10-10-10-10-10-1								Wagnesiani			1
United Part of the Composition o							0.17	(mg) Total			0.82
O.02053 g Total Mass  semiconductor device and its homogeneous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive) and with EU  semiconductor device and its homogeneous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive) and with EU  pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Including the provided in the semiconductor device and, to the best of Microchip model 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 redible reason to believe that the unavoidable impurity concentration of the chemical substance is above, the chemical substance is not redible reason to believe that the unavoidable impurity concentration of the chemical stance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  Inig compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IOTM family of databases to obtain a test report at // (u.c.myloba/depl/gages/elferings/industries/chemicals/plastics).  Doped Silloon 7440-21-3 100.00  Total 100.00  Wire Bond % of Total Weight 0.53  protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing silp on the outer box certain "rees" may be made from PVC plastic.  Total 100.00  Doped Gold 7440-57-5 100.00  Doped Gold 7440-57-5 100.00  Doped Gold 7440-57-5 100.00  Total 100.00  Doped Gold 7440-57-5 100.00  Doped Gold 7440-	11 11 11 11						0.11				0.02
D.0.2053 g Total Mass semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (Roh Directive), EU Directive), EU Directive 2011/65/EU (Roh S Recast Directive) and with EU citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Dipliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Hermical 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 mology 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 NOT an intentional ingredient in the semiconductor device and, to the best of Microchip meet the UL94 V9 flammability standard for plastics. You can access the UL (QTM family of databases to obtain a test report at (NLL.com/global/eng/pages/offerings/industries/chemicals/plastics/) rorecterive "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  Doped Gold 7.440-57.5 10	1111	1440-31-3 Flating 6									
semiconductor device and its homogenous materials comply with EU Directive 2027/8/FC (RoHS Directive), EU Directive 2011/8/FU (RoHS Recast Directive) and with EU tive 2002/8/FC (End-of-Life Vehicles (ELV) Directive).    Doped Silicon   Total   Total		0.000F0 T		100.000	20.000	1,000,000		Epoxy Resili			J
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/ful.com/global/eng/pages/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 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 ces 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 nate the 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 are material pilers. Supplier information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These nates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Ochip Technology Incorporated does not provided any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in ochip's quotations, sales order acknowledgement, and invoices.  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 parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports  Tin 7440-31-5 100.00	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		, , , , , , , , , , , , , , , , , , , ,	itorio iteoas	n Directive, ai	id with EO	0.45	(mg) Total	Chip (Die)	% of Total Weight	2.18
pochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor been 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 antee the 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 lilers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material lilers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. These nates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Suchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product anties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in anties provided in this declaration. The exclusive, limited product anties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this declaration. The exclusive, limited product anties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this form the substitution of the subst	pliance with the above EU Directives has been verified hemical substance is absent from the list above, the ch	via internal design controls, supp	ntional ingredient in the semiconductor device	and, to the b	est of Microc	- hip	0.45	-	7440-21-3	100	2.18
ochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor cases 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 cantee the 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 pilers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material pilers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These mates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Tochip 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 a condition of sale and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in a condition of sale and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in a condition of sale and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in a condition of sale and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in a condition of sale and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in a condition of sale and its subsidiaries are cont	pliance with the above EU Directives has been verified chemical substance is absent from the list above, the chemical substance is absent from the list above, the chenology Incorporated's knowledge and belief as of the castance, if any, is not below the threshold of regulatory ching compounds used by Microchip meet the UL94 Vo fl	via internal design controls, supp nemical substance is NOT an inten date of this document, there is no concern for any regulatory scheme lammability standard for plastics. ` als/plastics/	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide. You can access the UL iQTM family of databas	and, to the best impurity co	pest of Microconcentration of a test report a	hip f the chemical nt		Doped Silicon	7440-21-3 Total	100	
ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this declaration. The exclusive, infinite product in this action. The exclusive, infinite product in this e	npliance with the above EU Directives has been verified chemical substance is absent from the list above, the chemical substance is absent from the list above, the chenology Incorporated's knowledge and belief as of the content of	via internal design controls, supp nemical substance is NOT an inten date of this document, there is no concern for any regulatory scheme lammability standard for plastics. ` als/plastics/	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide. You can access the UL iQTM family of databas	and, to the best impurity co	pest of Microconcentration of a test report a	hip f the chemical nt		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
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  Tin 7440-31-5 100.00  Tin 7440-31-5 100.00	mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chehology Incorporated's knowledge and belief as of the cistance, if any, is not below the threshold of regulatory ciding compounds used by Microchip meet the UL94 V0 floc/l/ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship dertain "reels" may be made from PVC plastic.  protochip Technology Incorporated believes the informationices in their original packing materials is true and correct arantee the completeness and accuracy of data in this foppliers. Supplier information is often protected from discippliers. Information is provided only as estimates of the a	via internal design controls, supp- nemical substance is NOT an inten- date of this document, there is no- concern for any regulatory scheme lammability standard for plastics. ` als/plastics/ uped are made from polyvinyl chlor on in this form concerning substan- ct to the best of its knowledge and orm because it has been compiled losure as trade secrets and some average weight of these parts and	titional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide.  You can access the UL iQTM family of database ride (PVC) plastic. "Window envelopes" used to ces restricted by RoHS in Microchip Technolo I belief, as of the date listed in this form. Microbased on the ranges provided in Material Safe information may not have been provided by sithe average weight of anticipated significant to	and, to the be impurity consess to obtain to hold the particular of the particular o	pest of Microconcentration of a test report a acking slip on acking slip on ted's semicology Incorpor pets provided be assemblers an	hip f the chemical it the outer box inductor ated cannot y raw material I raw material		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
Total 100 00	a chemical substance is absent from the list above, the chenology Incorporated's knowledge and belief as of the obstance, if any, is not below the threshold of regulatory colding compounds used by Microchip meet the UL94 V0 flp://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 information vices in their original packing materials is true and correct arantee the completeness and accuracy of data in this for popilers. Supplier information is often protected from discippliers. Information is provided only as estimates of the attimates do not include trace levels of dopants, metals, an crochip Technology Incorporated does not provide any wrranties provided by Microchip Technology Incorporated	via internal design controls, supplemental substance is NOT an intendate of this document, there is no concern for any regulatory scheme lammability standard for plastics. Its/plastics/ uped are made from polyvinyl chlorin in this form concerning substanct to the best of its knowledge and orm because it has been compiled losure as trade secrets and some average weight of these parts and do non-metal materials contained vararranty, express or implied, with rand its subsidiaries are contained.	titional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide.  You can access the UL iQTM family of database ride (PVC) plastic. "Window envelopes" used to ces restricted by RoHS in Microchip Technolo I belief, as of the date listed in this form. Microbased on the ranges provided in Material Safe information may not have been provided by sit the average weight of anticipated significant to within silicon devices (silicon IC) in the finished respect to the information provided in this decrease.	and, to the be impurity consess to obtain to hold the particular of the particular o	pest of Microconcentration of a test report a acking slip on leted's semicor logy Incorpor tes provided be ssemblers acknown on monents.	hip f the chemical  tt  the outer box  aductor ated cannot y raw material f raw material These	0.11	Doped Silicon  (mg) Total  Doped Gold	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 100.00	0.53
	mpliance with the above EU Directives has been verified chemical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the costance, if any, is not below the threshold of regulatory colding compounds used by Microchip meet the UL94 V0 floc/l/ul.com/global/eng/pages/offerings/industries/chemica es protective "tubes" in which the specific product is ship dicertain "reels" may be made from PVC plastic. Frochip Technology Incorporated believes the information vices in their original packing materials is true and correct arantee the completeness and accuracy of data in this foundation. Suppliers. Supplier information is often protected from discippliers. Information is provided only as estimates of the admitted ont include trace levels of dopants, metals, and prochip Technology Incorporated does not provide any was rranties provided by Microchip Technology Incorporated crochip's quotations, sales order acknowledgement, and crochip disclaims any duty to notify users of updates or cerwise, suffered by users or third parties as a result of the	via internal design controls, supplemenical substance is NOT an intendate of this document, there is no concern for any regulatory scheme lammability standard for plastics. Its/plastics/ upped are made from polyvinyl chloring in in this form concerning substanct to the best of its knowledge and orm because it has been compiled losure as trade secrets and some average weight of these parts and id non-metal materials contained vararanty, express or implied, with reland its subsidiaries are contained invoices.  Changes to Material Content Decla he users' reliance on the informati	ntional ingredient in the semiconductor device credible reason to believe that the unavoidable world-wide.  You can access the UL iQTM family of database ride (PVC) plastic. "Window envelopes" used to be set the date listed in this form. Microbased on the ranges provided in Material Safe information may not have been provided by sith the average weight of anticipated significant vithin silicon devices (silicon IC) in the finished espect to the information provided in this decid in Microchip's standard terms and conditions rations and shall not be liable for any damage	and, to the be impurity conses to obtain to hold the part of the p	pest of Microconcentration of a test report a acking slip on acking slip on leted's semicor logy Incorpor ets provided be seemblers and exclusive, linese are providuatirect, conse	hip f the chemical at the outer box inductor ated cannot y raw material d raw material These sited product ed in quential or	0.11	Doped Silicon  (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	100 100.00 100.00 % of Total Weight 100.00 100.00 % of Total Weight	0.53

Q3DE 20 UQFN 10:18 AM : 5/6/2014

MICROCHIP  Semiconductor Device	Semiconductor Device Type: MV 28 (Lead) UQFN 4x4x0.5mm (R6) "Contained In"				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	1	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.228	0.581	22,276	Enov	v Resin (NLP # 500-033-5)	Trade Secret	4.85	ł	
Phenolic Resin	Trade Secret	Mold Compound	2.228	0.581	22,276	Ерох	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	i	
Copper	7440-50-8	Lead Frame	34.095	8.899	340.953		Oalboll black	Total	100.00	4	
Tin	7440-31-5	Lead Frame	0.088	0.023	875	9.14	(mg) Total	Lead Frame	% of Total Weight		
Silver	7440-22-4	Lead Frame	0.667	0.023	6,668	9.14	Copper	7440-50-8	97.42	35	
Zinc	7440-22-4	Lead Frame	0.063	0.174	630		Copper	7440-50-8	0.25		
Chromium	7440-66-6	Lead Frame	0.088	0.016	875		Silver	7440-31-5	1.91	ł	
Silver	7440-47-3	Die Attach	1.123	0.023	11,232		Zinc	7440-22-4	0.18	ł	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.259	0.293	2,592		Chromium	7440-47-3	0.16	ł	
Treated silica	Trade Secret	Die Attach	0.029	0.008	288		Chiomium	Total	100.00	<u>J</u>	
Heterocyclic organic compound	Trade Secret	Die Attach	0.029	0.008	288	0.38	() T-4-1				
						0.38	(mg) Total	Die Attach	% of Total Weight	1.44	
Silicon Gold	7440-21-3 7440-57-5	Chip (Die) Wire Bond	8.700 0.510	2.271 0.133	87,000 5,100		Silver	7440-22-4 Trade Secret	78		
							Acrylate resins Proprietary		18		
Tin	7440-31-5 Platin	ng on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	8.420 <b>100.000</b>	2.198 <b>26.100</b>	84,200 1.000.000		Treated silica	Trade Secret Trade Secret	2	l	
		TOTALS:				Hete	rocyclic organic compound		2		
	0.0261 g	Total Mass		2000	.,,			Total	100.00	4	
is semiconductor device and its homogenous materials					,,,,,,,,			Total		-	
is semiconductor device and its homogenous materials rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2002	95/EC (RoHS Directive), EU Directive 2011/65/E	U (RoHS Recas		,,,,,,,,	2.27	Total (mg)	Total Chip (Die)	% of Total Weight	8.7	
	comply with EU Directive 2002	95/EC (RoHS Directive), EU Directive 2011/65/E	U (RoHS Recas		,,,,,,,,	2.27		Total Chip (Die) 7440-21-3	% of Total Weight		
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2002.  I via internal design controls, s hemical substance is NOT an in date of this document, there is gulatory concern for any regul	195/EC (RoHS Directive), EU Directive 2011/65/E upplier declarations, and /or analytical test data ntentional ingredient in the semiconductor devi no credible reason to believe that the unavoida atory scheme world-wide.	U (RoHS Recas ce and, to the b	est Directive) ar poest of Microconcentration o	nd with EU hip f the		Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3 Total	% of Total Weight		
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 chonology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of reolding compounds used by Microchip meet the UL94 V0 tp://ul.com/global/eng/pages/offerings/industries/chemics	comply with EU Directive 2002.  I via internal design controls, s hemical substance is NOT an i date of this document, there is gulatory concern for any regul flammability standard for plasti als/plastics/	P5/EC (RoHS Directive), EU Directive 2011/65/E upplier declarations, and /or analytical test data ntentional ingredient in the semiconductor devi no credible reason to believe that the unavoida atory scheme world-wide. ics. You can access the UL IQTM family of datal	U (RoHS Recas ce and, to the I ble impurity co	st Directive) ar pest of Microconcentration o	nd with EU hip f the	0.13	Total (mg)	Total Chip (Die) 7440-21-3	% of Total Weight		
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 condotogy incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of repolding compounds used by Microchip meet the UL94 Voltp://ul.com/global/eng/pages/offerings/industries/chemicate protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.	comply with EU Directive 2002.  I via internal design controls, s hemical substance is NOT an in date of this document, there is gulatory concern for any regul Ilammability standard for plasti als/plastics/ oped are made from polyvinyl o	195/EC (RoHS Directive), EU Directive 2011/65/E upplier declarations, and /or analytical test data ntentional ingredient in the semiconductor devi no credible reason to believe that the unavoida atory scheme world-wide. ics. You can access the UL iQTM family of datal chloride (PVC) plastic. "Window envelopes" use	U (RoHS Recase)  ce and, to the lible impurity co	est of Microconcentration o	hip f the at		Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	0.51	
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 conclosed in the control of	comply with EU Directive 2002.  I via internal design controls, s hemical substance is NOT an i date of this document, there is gulatory concern for any regul flammability standard for plast als/plastics/ pped are made from polyvinyl o on in this form concerning subs ct to the best of its knowledge orm because it has been compi from disclosure as trade secret mates of the average weight of	195/EC (RoHS Directive), EU Directive 2011/65/E upplier declarations, and /or analytical test data tentional ingredient in the semiconductor devi no credible reason to believe that the unavoida atory scheme world-wide.  ics. You can access the UL iQTM family of datal chloride (PVC) plastic. "Window envelopes" use stances restricted by RoHS in Microchip Techni and belief, as of the date listed in this form. Mic led based on the ranges provided in Material Se is and some information may not have been pro these parts and the average weight of anticipa	U (RoHS Recas  ce and, to the t ble impurity co bases to obtain d to hold the p blogy Incorpora rochip Techno fety Data Shee wided by subc ted significant	pest of Microconcentration of a test report a packing slip or ated's semicology incorports provided by ontract assem toxic metals c	hip f the at n the outer nductor ated cannot y raw ablers and		Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	. 0.51	
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 cachnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of the emical substance, if any, is not below the threshold of the public compounds used by Microchip meet the UL9/4 Vol. 4pt/lul.com/global/eng/pages/offerings/industries/chemic:  be protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the informatives in their original packing materials is true and correarantee the completeness and accuracy of data in this for taterial suppliers. Supplier information is often protected we material suppliers. Information is provided only as esti	comply with EU Directive 2002.  I via internal design controls, shemical substance is NOT an indate of this document, there is gulatory concern for any regul flammability standard for plastials/plastics/ oped are made from polyvinyl con in this form concerning subset to the best of its knowledge orm because it has been compifrom disclosure as trade secret mates of the average weight of talls, and non-metal materials covarranty, express or implied, we tand its subsidiaries are contained.	ps/EC (RoHS Directive), EU Directive 2011/65/E upplier declarations, and /or analytical test data ntentional ingredient in the semiconductor devi no credible reason to believe that the unavoida atory scheme world-wide.  ics. You can access the UL iQTM family of datal chloride (PVC) plastic. "Window envelopes" use stances restricted by RoHS in Microchip Techni and belief, as of the date listed in this form. Mic led based on the ranges provided in Material Sa is and some information may not have been pro these parts and the average weight of anticipa contained within silicon devices (silicon IC) in the tith respect to the information provided in this con-	U (RoHS Recase)  ce and, to the lible impurity copases to obtain do hold the property of the pology incorporate of the pol	st Directive) are set of Microconcentration of a test report a test report at set of Microconcentration of the set of the	hip f the  at hitheouter ated cannot y raw ablers and components.		Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	. 0.51	
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 connection of the control of	comply with EU Directive 2002.  I via internal design controls, shemical substance is NOT an indicate of this document, there is gulatory concern for any regul flammability standard for plastials/plastics/ oped are made from polyvinyl con in this form concerning subsect to the best of its knowledge orm because it has been compifrom disclosure as trade secret mates of the average weight of tals, and non-metal materials covarranty, express or implied, we dand its subsidiaries are contait invoices.  Changes to Material Content Dehe users' reliance on the informate.	upplier declarations, and /or analytical test data tentional ingredient in the semiconductor devi no credible reason to believe that the unavoida atory scheme world-wide.  ics. You can access the UL iQTM family of datal chloride (PVC) plastic. "Window envelopes" use stances restricted by RoHS in Microchip Techniand belief, as of the date listed in this form. Mic led based on the ranges provided in Material Sets and some information may not have been protected the protected within the protected in this formation devices (silicon IC) in the tith respect to the information provided in this coined in Microchip's standard terms and conditional collarations and shall not be liable for any dama	U (RoHS Recase)  ce and, to the legisler in th	pest of Microconcentration of a test report a packing slip or ated's semicorlogy incorportes provided by ontract assem toxic metals cis.  e exclusive, linese are provided ndirect, conse	hip f the at n the outer nductor ated cannot y raw ablers and components. nited product ed in quential or	0.13	Total (mg)  Doped Silicon  (mg) Total  Doped 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 annealed at 150°C for 1	% of Total Weight 100 100.00 % of Total Weight 100 100.00	. 0.51	

MV 8 UQFN 10:18 AM : 5/6/2014

MICROCHIP	Device Type: MV/MX 28	UOEN Curino France, and		nination Base Copper Alloy				nogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor	Device Type: WV/WA 28									63
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight			1.24	(mg) Total	Mold Compound	% ot Total Weight	42.75
				mg/part	ppm		Silica, fused	60676-86-0	90.00	1
Silica, fused Epoxy Resin	60676-86-0 500-033-5	Mold Compound  Mold Compound	38.475 2.073	1.120 0.060	384,750 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		Calbuil Black	Total	100.00	<u>I</u>
Tin	7440-30-8	Lead Frame	0.108	0.003	1.084	1.26	(mg) Total	Lead Frame	% of Total Weight	
Silver	7440-31-3	Lead Frame	0.108	0.003	8.262	1.20	Copper	7440-50-8	97.42	43.37
Zinc	7440-66-6	Lead Frame	0.020	0.002	781		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.108	0.002	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	<u>u</u>
Gold	7440-57-5	Wire Bond	1.380	0.040	13,800	0.04	(mg) Total	Die Attach	% of Total Weight	
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	1
	7 110 01 0	TOTALS:	100.000	2.910	1.000.000		Solid Epoxy Resin	Trade Secret	65.00	
	0.0020	g Total Mass			,,			Total	100.00	4
This semiconductor device and its homogenous mat	erials comply with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (	RoHS Recas	st Directive) ar	nd with EU	0.00	(mm) Tatal	Chin (Dia)	0/ of Total Weight	0.05
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directives with the above EU Directives has been v	ctive). erified via internal design controls	s, supplier declarations, and /or analytical test data.		ŕ		0.26	(mg) Total  Doped Silicon	7440-21-3	% of Total Weight	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Dire Compliance with the above EU Directives has been v f a chemical substance is absent from the list above Fechnology Incorporated's knowledge and belief as substance, if any, is not below the threshold of regul	ctive). erified via internal design controls , the chemical substance is NOT a of the date of this document, there atory concern for any regulatory s	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide.	and, to the beimpurity co	pest of Microconcentration o	hip f the chemical	0.26	1	. , ,	-	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Dire Compliance with the above EU Directives has been v f a chemical substance is absent from the list above Fechnology Incorporated's knowledge and belief as substance, if any, is not below the threshold of regul	ctive). erified via internal design controls the chemical substance is NOT a of the date of this document, there atory concern for any regulatory s 4 V0 flammability standard for pla	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable	and, to the beimpurity co	pest of Microconcentration o	hip f the chemical	0.26	1	7440-21-3	100	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directives has been v f a chemical substance is absent from the list above Fechnology Incorporated's knowledge and belief as is substance, if any, is not below the threshold of regul Molding compounds used by Microchip meet the ULS http://ul.com/global/eng/pages/offerings/industries/cife product the protective "tubes" in which the specific product	ctive). erified via internal design controls the chemical substance is NOT a of the date of this document, there atory concern for any regulatory s of the date of this document, there atory concern for any regulatory s of the thick of the	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide.	and, to the beimpurity co	pest of Microc oncentration o a test report a	hip f the chemical at		Doped Silicon	7440-21-3 Total	100	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directives has been vf a chemical substance is absent from the list above Fechnology Incorporated's knowledge and belief as substance, if any, is not below the threshold of regul Molding compounds used by Microchip meet the ULS http://ul.com/global/eng/pages/offerings/industries/clfhe protective "tubes" in which the specific product and certain "reels" may be made from PVC plastic.	ctive). erified via internal design controls, the chemical substance is NOT a of the date of this document, there atory concern for any regulatory so 44 V0 flammability standard for planemicals/plastics/ is shipped are made from polyvin	s, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable scheme world-wide.  Istics. You can access the UL iQTM family of databas yl chloride (PVC) plastic. "Window envelopes" used to	and, to the beimpurity co	pest of Microc oncentration o a test report a acking slip on	hip f the chemical at the outer box		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	1.38
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directives and seen vife a chemical substance is absent from the list above fechnology Incorporated's knowledge and belief as is substance, if any, is not below the threshold of regul Molding compounds used by Microchip meet the ULS attp://ul.com/global/eng/pages/offerings/industries/cife product and certain "reels" may be made from PVC plastic. Wicrochip Technology Incorporated believes the info devices in their original packing materials is true and guarantee the completeness and accuracy of data in suppliers. Supplier information is often protected fro suppliers. Information is provided only as estimates as suppliers. Information is provided only as estimates and suppliers.	ctive). erified via internal design controls, the chemical substance is NOT a of the date of this document, there atory concern for any regulatory s 14 V0 flammability standard for planemicals/plastics/ is shipped are made from polyvin rmation in this form concerning s correct to the best of its knowled this form because it has been coin m disclosure as trade secrets and of the average weight of these par	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide. Istics. You can access the UL iQTM family of databas	and, to the best impurity consistency of the part of t	pest of Microconcentration of a test report a acking slip on atted's semicor logy incorpor. Its provided be ssemblers and	hip If the chemical It the outer box Inductor It at the content of		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	1.38
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directory and the above EU Directives has been we fare chemical substance is absent from the list above Fechnology Incorporated's knowledge and belief as is substance, if any, is not below the threshold of regul Molding compounds used by Microchip meet the ULS http://ul.com/global/eng/pages/offerings/industries/clfhe protective "tubes" in which the specific product and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the info devices in their original packing materials is true and suppliers. Supplier information is often protected fro suppliers. Information is provided only as estimates estimates do not include trace levels of dopants, met Microchip Technology Incorporated does not provide Microchip Technology Incorporated does not provide Microchip Technology Incorporated does not provide	ctive).  erified via internal design controls the chemical substance is NOT a of the date of this document, there atory concern for any regulatory s 4 V0 flammability standard for pla nemicals/plastics/ is shipped are made from polyvin  rmation in this form concerning s is correct to the best of its knowled this form because it has been coin m disclosure as trade secrets and of the average weight of these parals, and non-metal materials cont er any warranty, express or implied orated and its subsidiaries are co	s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide. Institute of the control of the c	and, to the beinpurity co es to obtain to hold the participation of the gy Incorpora- chip Techno ty Data Shee beontract at oxic metals of parts.	pest of Microconcentration of a test report a acking slip on atted's semicorlogy Incorporotes provided be assemblers and components.	hip f the chemical at the outer box adductor ated cannot y raw material f raw material These		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	1.38
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directory and the above EU Directives has been versus a chemical substance is absent from the list above fechnology Incorporated's knowledge and belief as substance, if any, is not below the threshold of regul Molding compounds used by Microchip meet the ULS attp://ul.com/global/eng/pages/offerings/industries/clfhe protective "tubes" in which the specific product and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the info devices in their original packing materials is true and juarantee the completeness and accuracy of data in suppliers. Supplier information is often protected from suppliers. Supplier information is often protected from the provided only as estimates the suppliers of the provided only as estimates destinates do not include trace levels of dopants, met Microchip Technology Incorporated does not provide warranties provided by Microchip Technology Incorporated does not provided varranties provided by Microchip Technology Incorporated incorporated incorporated incorporated does not provided varranties provided by Microchip Technology Incorporated does not provided varranties provided by Microchip Technology Incorporated does not provided warranties provided by Microchip Technology Incorporated for acknowledgement with the provided only as estimates of the provided by Microchip Technology Incorporated does not provi	erified via internal design controls, the chemical substance is NOT at of the date of this document, there atory concern for any regulatory satury concern for any regulatory satury 4 V0 flammability standard for planemicals/plastics/ is shipped are made from polyvin rmation in this form concerning sature to the best of its knowled this form because it has been comed in the average weight of these parals, and non-metal materials content and non-metal materials content and invoices.	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide.  Is in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide.  Isstics. You can access the UL iQTM family of databas yl chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Safe is ome information may not have been provided by suts and the average weight of anticipated significant to alined within silicon devices (silicon IC) in the finished with respect to the information provided in this decl.	and, to the to impurity coes to obtain to hold the pay Incorporating Technoly Data Shee becontract a system that is of sale. The of sale. The state of impurity control or incorporation to the sale of sale of sale.	pest of Microconcentration of a test report a acking slip on ated's semicory logy Incorporets provided be assemblers and components. The exclusive, limese are providendirect, conse	hip f the chemical at the outer box inductor ated cannot y raw material f raw material frhese inted product ed in quential or	0.04	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	100 100.00 % of Total Weight 100.00	2.17

MV\_MX 10:19 AM : 5/6/2014

Basic Substance  CAS Number  CORTAINED SUB-Component  Weight mg/part ppm  Sub-Component  Su	CROCHIP				ation Base per Alloy (0	•		·	geneous Materials: g. pc boards, display:	s)	JEDEC 97 Product Markin and/or Pkg. Labeling
Basic Substance	Semiconductor Device	Type: MV 40 (Lead	UQFN 5x5x0.5mm (S5)								e3
State: Substance  CAS Number  Sub-Compound  Permitter Respond  Trade Server  Mod Compound  1, 1505  Cooper  1, 744,0525   Lead Frame  1, 744,0526   Lead Frame  1, 744,0527   Tim			"Contained In"	% Total							
Epoxy Resin (N.P. # 250-033-5)	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	18.45	(mg) Total	Mold Compound	% ot Total Weight	43.41
Phenotic Resist	Silica, fused	60676-86-0	Mold Compound	39.069	16.604	390,690		Silica, fused	60676-86-0	90.00	
Carbon Black   1333-86-1   Mold Compound   0.130   0.055   1.302	Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.105	0.895	21,054	Epoxy	Resin (NLP # 500-033-5)	Trade Secret	4.85	
Copper	Phenolic Resin	Trade Secret	Mold Compound	2.105	0.895	21,054		Phenolic Resin	Trade Secret	4.85	
Tin 1744031-5 Lead Frame 0.518 0.108 0.046 1.077 18.31 (mg) Total Lead Frame % 0.076 10.030 1.077 2 18.00 (mg) Total Lead Frame % 0.076 10.033 175 2 10.000 1.000	Carbon Black	1333-86-4	Mold Compound	0.130	0.055	1,302		Carbon Black	1333-86-4	0.30	
Silver 7440-22-4 Lead Frame 0.078 0.033 775 Tim 7400-95-8 97.42   Zinc 7400-95-6 Lead Frame 0.078 0.033 775 Tim 7400-95-8 0.25   Chromium 7440-47-3 Lead Frame 0.078 0.033 775 Tim 7400-95-8 0.25   Silver 7440-22-4 Die Altach 1.240 0.527 12-402   Zinc 7440-95-8 0.18   Acryster research Strong the Strong that 1.240 0.00 0.00   Acryster research Strong that 1.240 0.00   Zinc 7440-95-8 0.18   Zinc	Copper	7440-50-8	Lead Frame	41.966	17.836	419,664			Total	100.00	ı
Silver 7440-62-4 Lead Frame 0.078 0.033 775 Tm 7440-91-8 0.25 Tm 7				0.108			18.31	(mg) Total	Lead Frame		43.08
Zinc 7440-96-96 Lead Frame 0.078 0.033 775 Ohromium 7440-24-3 Lead Frame 0.018 0.046 1.077 Silver 7440-24-4 1.91 Silver 7440-22-4 Dis Attach 1.240 0.527 12.402 Silver 7440-22-4 1.91 Silver 7440-22-4 Dis Attach 1.240 0.527 12.402 Silver 7440-22-4 1.91 Silver 7440-22-4 Silver 744	Silver		Lead Frame								
Chromium   7440-47-3   Lead Frame   0.108   0.048   1.077   12,402   2.77   12,402   1.77   1.											
Acytate resins Proprietary Trade Secret Die Attach 1240 0.527 12.402   Enc 7440-624 0.18   Treated alica Treated											
Acrylate resins Proprietary Trade Secret Die Attach 0.286 0.122 2.862 Traded Silcon Trade Secret Die Attach 0.032 0.014 318 0.68 (mg) Total Die Attach 1.50											
Treated silica Trade Secret Die Attach 0.032 0.014 318 Heterocyclic organic compound Trade Secret Die Attach 0.032 0.014 318 Silicon 7440-21-3 Chip (Die) 6.650 2.826 66.500 Gold 7440-27-5 Wire Bond 1.540 0.655 15.400 Tin 7440-31-5 Page on estimated state 1.540 1.650 1.650 1.650 1.540 1.650 1.6											
Heterocyclic organic compound Trade Secret   Die Attach   0.032   0.014   318   0.68   (mg) Total   Die Attach   % of Total Weight   1.59   Gold   7440-97-5   Tim   7440-97-5   Pauling on external large large   7440-97-5   Pauling on external lar							Į.	Gilleinidii			l
Silicon 7440-21-3 Chip (Die) 6.650 2.826 6.500 R. Solver 7440-22-4 78							0.00	(··· -) T- (-1			4.50
Acytate resins Proprietary   Triade Secret   18   Acytate resins Proprietary   Triade Secret   18   Acytate resins Proprietary   Triade Secret   18   Acytate resins Proprietary   Triade Secret   2   Acytate resins Proprietary   Triad							0.68				1.59
Tin 7440-31-5 Paging on external baseds (ping). Matte Tin / ammediad at 190°C for 1 hour 2,730 1,200 42,500 1,000,000 42,500 1,000 1,000 42,500 1,000 1,000 42,500 1,000 1,000 42,500 1,000 1,000 42,500 1,000 1											
UTL / Material compilation 0.0425 g Total Mass  emiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and U Directive 2002/95/EC (RoH-Of-Life Vehicles (ELV) Directive).  Inance 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 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 cal substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  In a 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 cal substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  In a substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is NOT an Intentional ingredient in the semiconductor devices and, to the best of Microchip of regulatory concern from any regulatory scheme world-wide.  In a substance is absent from the list above, the chemical substance is NOT an Intentional ingredient in the semiconductor devices and, to the best of Microchip of regulatory concern from the list above, the chemical substance is not the unavoidable impurity concentration of the call substance is absent from the list above, the chemical substance is not believe the information in the semiconductor devices in the indigental substance is absent from the list above, the chemical substance											
UTL / Material compilation 0.0425 g Total Mass    Total   100.00	lin	7440-31-5									
Inticonductor device and its homogenous materials comply with EU Directive 2002/93/EC (RoHS Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and Directive 2002/35/EC (End-of-Life Vehicles (ELV) Directive).  Inticonductor device and its homogenous materials comply with EU Directive 2002/93/EC (RoHS Directive). But Directive 2002/93/EC (RoHS Directive). Total Directive				100.000	42.500	1,000,000	Heter	ocyclic organic compound		_	
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 blogy 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 all substance, if any, is 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 obtain a test report at L.com/global/eng/pages/offerings/industries/chemicals/plastics/ stective "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 ox and certain "reels" may be made from PVC plastic.  hip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip logy Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been det significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices IC) in the finished parts.  hip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited to warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are did in Microchip's quotations, sales order acknowledgement, and invoices.  1.59 (mg) Total Planty of Total Weight 3.73 (mg) Total Video Total Weight 3.73 (mg) Total Video Total Weight 3.73 (mg) Total Video Total Weight 3.73 (mg)	miconductor device and its homogenous mater	rials comply with EU Dire	0	65/EU (RoHS F	Recast Direc	tive) and	2.83	Total (mg)	1		6.65
Ul.com/global/eng/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 box and certain "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's onductor devices 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 loogy Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material volated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices in IC) in the finished parts.  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 led in Microchip's quotations, sales order acknowledgement, and invoices.  1.59 (mg) Total Weight 1.54  Doped Gold 7.440-57-5 100  Doped Gold 7.440-57-5 100  Total 100.00  Tot	emiconductor device and its homogenous mater J Directive 2002/53/EC (End-of-Life Vehicles (EL	rials comply with EU Dire LV) Directive).	ctive 2002/95/EC (RoHS Directive), EU Directive 2011/		Recast Direc	tive) and	2.83	, 5,	Chip (Die)	% of Total Weight	6.65
box and certain "reels" may be made from PVC plastic.  thip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's onductor devices 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 looking Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Pata Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been led by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of bated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices in 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 ct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are led in Microchip's quotations, sales order acknowledgement, and invoices.  This is a standard terms and conditions of sale. These are led in Microchip's quotations, 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 led in Microchip's quotations, 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 led in Microchip's quotations, sales order acknowledgement, and invoices.  The provided by Microchip Technology Incorporated and its subsid	emiconductor device and its homogenous mater U Directive 2002/53/EC (End-of-Life Vehicles (EL iance with the above EU Directives has been ver emical substance is absent from the list above, to ology Incorporated's knowledge and belief as of	rials comply with EU Dire LV) Directive). rified via internal design of the chemical substance is f the date of this documen	civive 2002/95/EC (RoHS Directive), EU Directive 2011/ controls, supplier declarations, and /or analytical test s NOT an intentional ingredient in the semiconductor nt, there is no credible reason to believe that the una	data. device and, to	the best of	Microchip	2.83	, 5,	Chip (Die) 7440-21-3	% of Total Weight	6.65
onductor devices 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 lology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been led by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of lead by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been led by subcontract assemblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been led by subcontract assemblers and rate average weight of least by subcontract assemblers and rate is subjected assemblers and rate is subjected by subcontract assemblers and some information may not have been lead by subcontract assemblers and some information may not have been lead by subcontract assemblers and some information may not have been lead by subcontract assemblers and some information in Microchip in deserging the average weight of these parts and the average weight of these parts and the average weight of least part and subject or subject and subje	emiconductor device and its homogenous mater U Directive 2002/53/EC (End-of-Life Vehicles (EL iance with the above EU Directives has been ver- emical substance is absent from the list above, in cology Incorporated's knowledge and belief as official substance, if any, is not below the threshold g compounds used by Microchip meet the UL94	rials comply with EU Dire LV) Directive). rified via internal design of the chemical substance is f the date of this document of regulatory concern for LVO flammability standare	citive 2002/95/EC (RoHS Directive), EU Directive 2011/ controls, supplier declarations, and /or analytical test is NOT an intentional ingredient in the semiconductor nt, there is no credible reason to believe that the unaverant rany regulatory scheme world-wide.	data. device and, to oidable impur	the best of	Microchip ation of the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	6.65 1.54
chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited ct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are led in Microchip's quotations, sales order acknowledgement, and invoices.  In 1.59 (mg) Total	emiconductor device and its homogenous mater U Directive 2002/53/EC (End-of-Life Vehicles (EL iance with the above EU Directives has been ver- emical substance is absent from the list above, clogy Incorporated's knowledge and belief as often cal substance, if any, is not below the threshold g compounds used by Microchip meet the UL94 il.com/global/eng/pages/offerings/industries/chotective "tubes" in which the specific product is	rials comply with EU Dire.  V) Directive).  rified via internal design of the chemical substance is the date of this document of regulatory concern for the different standard emicals/plastics/ s shipped are made from	civive 2002/95/EC (RoHS Directive), EU Directive 2011/ controls, supplier declarations, and /or analytical test s NOT an intentional ingredient in the semiconductor nt, there is no credible reason to believe that the unar r any regulatory scheme world-wide. If or plastics. You can access the UL iQTM family of o	data. device and, to oidable impur atabases to o	the best of ity concentr btain a test i	Microchip ation of the eport at		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
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	emiconductor device and its homogenous mater U Directive 2002/53/EC (End-of-Life Vehicles (EL iance with the above EU Directives has been vere emical substance is absent from the list above, to logy (Incorporated's knowledge and belief as of call substance, if any, is not below the threshold g compounds used by Microchip meet the UL94 al.com/global/eng/pages/offerings/industries/chotective "tubes" in which the specific product is loox and certain "reels" may be made from PVC hip Technology Incorporated believes the information of inductor devices in their original packing mater logy Incorporated cannot guarantee the compl Data Sheets provided by raw material suppliers ed by subcontract assemblers and raw material ated significant toxic metals components. Thes in (C) in the finished parts. hip Technology Incorporated does not provide t warranties provided by Microchip Technology ed in Microchip's quotations, sales order ackno	rials comply with EU Dire- LY) Directive).  rified via internal design of the chemical substance is the date of this document of regulatory concern for the district of regulatory concern for the concern for	ctive 2002/95/EC (RoHS Directive), EU Directive 2011/ controls, supplier declarations, and /or analytical test is NOT an intentional ingredient in the semiconductor nt, there is no credible reason to believe that the unar r any regulatory scheme world-wide. If or plastics. You can access the UL iQTM family of of polyvinyl chloride (PVC) plastic. "Window envelopes' rning substances restricted by RoHS in Microchip Te the best of its knowledge and belief, as of the date lid data in this form because it has been compiled base often protected from disclosure as trade secrets and provided only as estimates of the average weight of te trace levels of dopants, metals, and non-metal mate implied, with respect to the information provided in ti sidiaries are contained in Microchip's standard terms s.	data.  device and, to oidable impur atabases to o used to hold chnology Inco the range some informat hese parts and rials containe and condition and condition	the best of rity concentre btain a test of the packing proporated's m. Microchip s provided in tion may not d the average d within silic n. The exclusins of sale. T	Microchip ation of the report at slip on the n Material have been e weight of con devices sive, limited hese are	0.65	Doped Silicon  (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	% of Total Weight 100 100.00 % of Total Weight 100 100.00	
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MV 40 UQFN 10:19 AM : 5/6/2014

MICROCHIP  Semiconductor Device	Type: MV UQFN	48 6x6x0 5mm (R7)		ination Base opper Alloy	,			ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Gerificonductor Device	Type. IIIV Out IV	"Contained In"	% Total	1						
Basic Substance	CAS Number	Sub-Component	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	20112	Copper	7440-50-8	97.4150	00.01
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	0.50	Silver	7440-22-4	78.00	1.04
Gold	7440-57-5	Wire Bond	0.800	0.510	8.000		Acrylate resins Proprietary	Trade Secret	18.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	7.000	4.466	70.000		Treated silica	Trade Secret	2.00	
								Trade Secret		
		TOTALS:	100.000	63.800	1.000.000		Heterocyclic organic compou	Trade Secret	2.00	
s semiconductor device and its homogenous materials co active 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directive 20	, ,	100.000 RoHS Recast	63.800 t Directive) an	1,000,000 nd with EU	3.61	Heterocyclic organic compou	Trade Secret  Total  Chip (Die)	% of Total Weight	5.66
is semiconductor device and its homogenous materials co ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified v	mply with EU Directive 20	g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (I	RoHS Recast	t Directive) an	nd with EU			Total Chip (Die) 7440-21-3	100.00 % of Total Weight	5.66
semiconductor device and its homogenous materials concive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vehemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above.	mply with EU Directive 20 ia internal design controls emical substance is NOT a te of this document, there	g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (I s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable	RoHS Recast	t Directive) an	nd with EU		(mg) Total	Total Chip (Die)	100.00 % of Total Weight	5.66
s semiconductor device and its homogenous materials concive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified vechemical substance is absent from the list above, the che hology Incorporated's knowledge and belief as of the destance, if any, is not below the threshold of regulatory coding compounds used by Microchip meet the UL94 V0 fla	mply with EU Directive 20 ia internal design controls mical substance is NOT a te of this document, there ncern for any regulatory s mmability standard for pla	g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (I s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide.	RoHS Recast and, to the b impurity con	t Directive) ar est of Microc ncentration o	nd with EU hip f the chemical		(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	0.80
s semiconductor device and its homogenous materials concive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified verified to the substance is absent from the list above, the charmology Incorporated's knowledge and belief as of the distance, if any, is not below the threshold of regulatory confunction of the substance is any list of the distance of the substance is any list of the distance in the substance is not below the threshold of regulatory confunction of the substance is not below the threshold of regulatory confunction of the substance is not substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance is not substance in the substance in the substance in the substance is not substance in the substa	mply with EU Directive 20 ia internal design controls mical substance is NOT a tte of this document, there neern for any regulatory s mmability standard for pla s/plastics/	g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (I s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is in occredible reason to believe that the unavoidable scheme world-wide.  Instics. You can access the UL iQTM family of database	RoHS Recast and, to the b impurity con	t Directive) are st of Microci ncentration o	nd with EU  hip f the chemical	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	
is semiconductor device and its homogenous materials co ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	in internal design controls in internal design controls in its substance is NOT atte of this document, there incern for any regulatory is immability standard for playing substices/ ed are made from polyvin in this form concerning is to the best of its knowled in the best of its knowled in the substitute in the strade secrets and erage weight of these par	g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (I s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide. Institute of the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide. Institute of the semiconductor device is the semiconductor device is the semiconductor device is not credible reason to believe that the unavoidable is not call the semiconductor device in the semiconductor device is not considered in this form. Microcompiled based on the ranges provided in Material Safet is some information may not have been provided by su ts and the average weight of anticipated significant to	and, to the being purity colors to obtain a be hold the party incorporate this Technol y Data Sheeb becontract as xic metals cometals contracts.	est of Microci ncentration o a test report a cking slip on ted's semicor ogy Incorpors ts provided b ssemblers and	hip f the chemical at the outer box adductor ated cannot y raw material	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	
is semiconductor device and its homogenous materials of ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive), impliance with the above EU Directives has been verified vero chemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the debstance, if any, is not below the threshold of regulatory coolding compounds used by Microchip meet the UL94 V0 flaps/lul.com/global/eng/pages/offerings/industries/chemicals e protective "tubes" in which the specific product is shipped certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information vices in their original packing materials is true and correct arantee the completeness and accuracy of data in this for poliers. Supplier information is often protected from discloppliers. Information is provided only as estimates of the average of the suppliers.	in internal design controls in internal design controls in internal substance is NOT atte of this document, there incern for any regulatory symmability standard for playplastics/ ed are made from polyvin in this form concerning so to the best of its knowled in because it has been consure as trade secrets and erage weight of these par non-metal materials contranty, express or implied and its subsidiaries are co	g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (I s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable is no credible reason to believe that the unavoidable is no credible reason to believe that the unavoidable istics. You can access the UL iQTM family of database yl chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technolog ge and belief, as of the date listed in this form. Microc mpiled based on the ranges provided in Material Safet some information may not have been provided by su ts and the average weight of anticipated significant to ained within silicon devices (silicon IC) in the finished but with respect to the information provided in this declaration.	and, to the bimpurity colusts to obtain a bind the particular bind	est of Microci ncentration o a test report a acking slip on ted's semicor ogy Incorpor ts provided b ssemblers and omponents. 1	hip f the chemical at the outer box adductor ated cannot y raw material d raw material rhese	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	
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UQFN 48 6x6 10:19 AM : 5/6/2014

MICROCHIP				nation Base pper Alloy (0	•		•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Devi	ce Type: QVCE 16 (I	Lead) VQFN 3x3x0.9mm (QV)								e3
		"Contained In"	% Total			10.00			a, . <del></del>	
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		
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	
	0.0253	Tatal Mass						Total	100.00	
his semiconductor device and its homogenous materials irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	comply with EU Directive 20	g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	IS Recast Dire	ctive) and wi	th EU	0.34	(mg) Total	Chip (Die)	% of Total Weight	1.34
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 or	comply with EU Directive 20 ) d via internal design controls chemical substance is NOT a	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	, to the best o	f Microchip T	echnology	0.34	(mg) Total  Doped GaAs			1.34
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 op- acorporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a	comply with EU Directive 20 d via internal design controls chemical substance is NOT at document, there is no credib iny regulatory scheme world- flammability standard for pla	20295/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 o	f Microchip T chemical su	echnology	0.34	1	Chip (Die) 1300-00-00	% of Total Weight	
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 concorporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a dolding compounds used by Microchip meet the UL94 VO ttp://ul.com/global/eng/pages/offerings/industries/chemical	comply with EU Directive 20 d via internal design controls chemical substance is NOT at document, there is no credib any regulatory scheme world- flammability standard for pla cals/plastics/	20/295/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 concer wide.	, to the best o ntration of the o obtain a tes	f Microchip T chemical su t report at	echnology bstance, if		Doped GaAs	Chip (Die) 1300-00-00 Total	% 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 corporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for your condition of the compounds used by Microchip meet the UL94 Voltey. "In which the specific product is shing certain "reels" may be made from PVC plastic. Ilicrochip Technology Incorporated believes the information their 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	d via internal design controls divide a via internal design controls chemical substance is NOT at document, there is no credib any regulatory scheme world-flammability standard for placals/plastics/ ipped are made from polyvington in this form concerning step best of its knowledge and bese it has been compiled base it rade secrets and some inforvelight of these parts and the everythese controls and the everythese controls are secrets.	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conceivide.  Instics. You can access the UL iQTM family of databases the local structure of the loca	, to the best on tration of the oobtain a testoold the packin accorporated's logy incorporated by raemblers and remblers and remblers and remblers and remblers and remoters and remblers and remoters a	f Microchip T chemical sul t report at g slip on the semiconduc ated cannot g aw material s aw material s	echnology bstance, if outer box tor devices juarantee uppliers. suppliers.		Doped GaAs  (mg) Total	Chip (Die) 1300-00-00 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	·
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 electroporated's knowledge and belief as of the date of this ny, is not below the threshold of regulatory concern for a folding compounds used by Microchip meet the UL94 V0 (bits://ul.com/global/eng/pages/offerings/industries/chemic he protective "tubes" in which the specific product is shind certain "reels" may be made from PVC plastic. dicrochip Technology Incorporated believes the information their original packing materials is true and correct to the ecompleteness and accuracy of data in this form becau upplier information is often protected from disclosure as information is provided only as estimates of the average wilclude trace levels of dopants, metals, and non-metal mailicrochip Technology Incorporated does not provide any	d via internal design controls divide a via internal design controls chemical substance is NOT and document, there is no credibiny regulatory scheme world-flammability standard for placals/plastics/ ipped are made from polyviny ion in this form concerning step best of its knowledge and be see it has been compiled base it rade secrets and some inforwight of these parts and the terials contained within silico warranty, express or implied, and its subsidiaries are core	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conceivide.  Instics. You can access the UL iQTM family of databases the local structure of the loca	, to the best of the oo obtain a test old the packin accorporated's logy Incorporated by a remblers and mponents. The exclution. The exclution of the object	f Microchip To chemical suit report at g slip on the semiconducated cannot gaw material saw material sese estimates	echnology bstance, if outer box tor devices juarantee uppliers. uppliers. s do not		Doped GaAs  (mg) Total	Chip (Die) 1300-00-00  Total  Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight	0.4
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 corporated's knowledge and belief as of the date of this law, is not below the threshold of regulatory concern for a colding 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 shind certain "reels" may be made from PVC plastic. dicrochip Technology Incorporated believes the informative their 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 information is provided only as estimates of the average we clude trace levels of dopants, metals, and non-metal mailicrochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporated ilicrochip's quotations, sales order acknowledgement, an licrochip disclaims any duty to notify users of updates or	d via internal design controls chemical substance is NOT at document, there is no credib uny regulatory scheme world-flammability standard for placals/plastics/ ipped are made from polyviny ion in this form concerning step the standard for placals/plastics/ ipped are made from polyviny ion in this form concerning step the standard for placals/plastics/ ipped are made from polyviny ion in this form concerning step the standard from polyviny ion in this form concerning step that is it has been compiled base is trade secrets and some inforweight of these parts and the tetrials contained within silico warranty, express or implied, and its subsidiaries are cord invoices.	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHs, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conceivide.  Institute of the conceiving and the conceivin	, to the best ontration of the oobtain a testoold the packin encorporated's logy incorporated by remblers and remponents. The tion. The exclusiale. These arrect or indirect	f Microchip T chemical suit t report at g slip on the semiconductated cannot g aw material staw mate	echnology bstance, if outer box tor devices quarantee uppliers. s do not product	0.10	Doped GaAs  (mg) Total  Doped Gold	Chip (Die)  1300-00-00  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 100 100.00	2.38

QVCE 16 VQFN 10:20 AM : 5/6/2014

Semiconductor Device Type: 24 VOFN 4x40.9 (Rt)	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance		es
Epoxy Resin Trade Secret Mold Compound 1,677 1,082 24,317 Phenolic Resin Trade Secret Mold Compound 1,677 1,082 16,770 Carbon Black 1333-86-4 Mold Compound 0,084 0,054 839 Copper 7449-50-8 Lead Frame 64,354 41,508 643,541  Illion 7439-89-6 Lead Frame 1,082 10,820 12,832 Silver 7440-22-4 Lead Frame 1,082 10,820 12,832 Phosphorous 7723-14-0 Lead Frame 0,056 0,036 1556 Silver 7440-22-4 Lead Frame 0,056 0,036 1556 Silver 7440-22-4 De Altach 0,071 0,011 1,702 Epoxy resin 9,003-95-5 Die Attach 0,046 0,030 460 Epoxy resin 9,003-95-5 Die Attach 0,046 0,030 460 Epoxy resin 9,043-95 Die Attach 0,046 0,030 460 Epoxy resin 9,648-0 Die Attach 0,007 0,004 69 Gamma-butyrolactone 96-48-0 Die Attach 0,007 0,004 69 Silven 7440-22-4 Silven 7440-23-1 Chip Bird Die Attach 0,007 0,004 69 Silven 7440-23-1 Chip Bird Die Attach 0,007 0,004	% ot Total Weight	27.95
Phenotic Resin   Trade Secret   Mold Compound   1.677   1.082   16.770   Carbon Black   1333-86-4   Mold Compound   0.084   0.054   839   Copper   7440-50-8   Lead Frame   64.354   41.508   645.541   Frame   1.583   1.021   15.830   43.45   Silver   7440-22-4   Lead Frame   1.283   0.828   12.832   Carbon Black   7440-22-4   Lead Frame   1.283   0.828   12.832   Carbon Black   7440-22-4   Lead Frame   0.084   0.054   64.54   Silver   7440-22-4   Lead Frame   0.084   0.054   64.54   Silver   7440-22-4   Lead Frame   0.084   0.054   64.54   Silver   7440-22-4   De Atlach   0.070   0.110   1.702   Epocy resin   9003-36-5   De Atlach   0.046   0.033   460   Copper(II) oxide   1317-38-0   De Atlach   0.007   0.004   69   Gamma-buryloctone   98-48-0   Die Atlach   0.007   0.004   69   Gamma-buryloctone   98-48-0   Die Atlach   0.007   0.004   69   Silver   7440-50-8   Wire Bond   0.323   0.209   3.234   Final Pallacium   7440-50-8   Wire Bond   0.323   0.209   0.204   66   Final Pallacium   7440-50-8   Wire Bond   0.323   0.209   0.204   67   Final Pallacium   7440-50-8   Wire Bond   0.300   0.004   0.004   0.004   0.000   0.004   0.	85.00	i
Carbon Black	8.70	4
Copper   7440-50-8   Lead Frame   1.583   1.021   15.580   43.581   43.585   63.581   1.583   1.583   43.585   63.581   1.583	6.00	4
Iron	0.30	1
Silver 7440-92-4 Lead Frame 1.283 0.828 12,832  Ten 7440-96-6 Lead Frame 0.054 0.054 842  Phosphorous 7723-14-0 Lead Frame 0.056 0.036 5.56  Silver 7440-96-6 Lead Frame 0.056 0.036 5.56  Silver 7440-92-4 De Attach 0.010 0.110 1,702  Epoxy resin 9003-98-5 Die Attach 0.046 0.030 460  Copperfill oxide 1317-98-0 Die Attach 0.046 0.030 460  Frosphorous 7723-14-0  Garma-butyrolactore 956-8-0 Die Attach 0.007 0.004 69  Garma-butyrolactore 956-8-0 Die Attach 0.007 0.004 69  Silicon 7440-92-1 3 Chip (Die) 2.910 1.377 29,100 Silver 7440-92-1 (mg) Total Die Attach 0.027 0.004 69  Paladrum 7440-95-8 Wire Bond 0.323 0.200 3.234  Paladrum 7440-95-8 Wire Bond 0.323 0.200 3.234  Paladrum 7440-95-5 Plang on external leads (pire) - Mans Ten Parenalised at 150°C for 1 hoor 1.020 0.007 0.004 69  TOTALS 1.020 0.787 12.2000  O.064.5 g Total Mass  Total In 100,000 0.004 0.0000  O.064.5 g Total Mass  Total In 100,000 0.000 0.0000  O.064.5 g Total Mass  Total In 100,000 0.000 0.0000  O.064.5 g Total Mass  Total In 100,000 0.0000 0.00000  O.064.5 g Total Mass  Total In 100,000 0.0000 0.000000  O.064.5 g Total Mass  Total In 100,000 0.000000  O.064.5 g Total Mass  Total In 100,000 0.00000000000000000000000000000	tal 100.00	
Trick   Tric	% of Total Weight	67.36
Phosphorous 7723-14-0 Lead Frame 0.056 0.036 556 Silver 7440-22-4 Die Attach 0.170 0.110 1.170 1.70 1.170 1.170 1.70 1.	95.54	4
Silver 7440-92-4 Die Attach 0.170 0.110 1.702   Zinc 7440-96-6   Epoxy resin 9003-36-5 Die Attach 0.048 0.033 460   Phosphorous 7723-14-0   Gamma-butyrolactone 95-48-0 Die Attach 0.0007 0.0004 69   Silicon 7440-91-3 Chip (Die) 2.910 1.877 2.91.001   Silicon 7440-91-3 Chip (Die) 2.910 1.877 2.91.001   Silicon 7440-95-3   Wire Bond 0.0323 0.209 3.234   Epoxy resin 9003-98-6   Epoxy resin 9	2.35	4
Epoxyresin 903-36-5 Die Attach 0.046 0.030 460 Copper 1317-38-0 Die Attach 0.007 0.004 69 Garma-butyrolactone 96-48-0 Die Attach 0.007 0.004 69 Folladium 7440-50-8 Wire Bond 0.323 0.209 3.294 Folladium 7440-50-8 Wire Bond 0.007 0.004 68 Folladium 7440-51-5 Plating on external leads (pira) - Matte Tri / annealed at 150°C for 1 hour 1.220 0.787 12.200  O.0645 g Total Mass  O.0740 g Total Mass  O.075 g Total Mass  O.075 g Total Mass  O.077 g Total Mass  O.078 g Total Mass  O.078 g Total Mass  O.079 g Total Mass  O.070 g Total Mass  O.079 g Total Mass  O.070 g Total Mass  O.070 g Total Mass  O.070 g	1.91	4
Copper (II) oxide   1317-38-0   Die Attach   0.007   0.004   69   0.15   (mg) Total   Die Attach   0.007   0.004	0.13 0.08	4
Gamma-butyrolactone 96-48-0 Die Attach 0.007 0.004 69 0.15 (mg) Total Die Attach Silicon 7440-21-3 Chip (Die) 2.910 1.877 29,100 2.910 1.877 29,100 3.234 Copper 7440-50-8 Wire Bond 0.323 0.209 3.234 Palladium 7440-95-3 Wire Bond 0.007 0.004 66 Epoxy resin 5003-36-5 Tin 7440-31-5 Pating on external leads (pers). Mater Tin / annealed at 150°C for 1 hour 1.220 0.787 1.2200 0.007 0.004 66 Gamma-butyrolactone 36-48-0 0.007 0.004 0.004 0.004 0.004 0.007 0.004 0.004 0.004 0.007 0.004 0.004 0.004 0.007 0.004 0.00		1
Silicon 7440-21-3 Chip (Die) 2-910 1.877 29.100 Copper 17440-50-8 Wire Bond 0.323 0.209 3.234 Palladium 7440-31-5 Plating on external leads (pine) - Mater Tin / annealed at 150°C for 1 to 0.007 0.004 66 Tin 7440-31-5 Plating on external leads (pine) - Mater Tin / annealed at 150°C for 1 to 0.007 0.004 66 TOTALS: 100.000 64.590 1,000,000  0.0645 g Total Mass  microductor 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  we 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  liance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  liance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  liance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  liance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  liance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  liance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  liance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  liance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  liance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  liance with the above EU Directives has been verified via internal design controls with the unavoidable impurity concentration of the chemical substance, if  (mg) Total Wire Bond  1.88 (mg) Total (mg) Total  (mg) Total  Wire	tal 100.00	
Copper 7440-50-8 Wire Bond 0.323 0.209 3.234 Palladium 7440-05-3 Wire Bond 0.007 0.004 66 Tin 7440-31-5 Plating on external leads (pirs) - Matte Tin/ annealed at 150°C for 1 hour 1.220 0.787 12.200  O.0645 g Total Mass  O.064.500 1,000,000	% of Total Weight	0.23
Palladium 7440-05-3 Wire Bond 0.007 0.004 66 Tin 7440-31-5 Plating on external leads (pire) - Matte Tin / annealed at 150°C for 1 hor 1.220 0.787 12.200  0.0645 g Total Mass  On Totals: 100.000 64.500 1,000,000  0.0645 g Total Mass  On Total Mass	74.00	4
Tin 7440-31-5 Plating on external leads (pirs) - Matter Tin / annealed at 150°C tor 1 hour 1220 0.787 12.200  0.0645 g Total Mass  1.88 (mg) Total 1.88 (mg) Total 1.88 (mg) Total 1.89 (mg) T	20.00	4
0.0645 g Total Mass  TOTALS: 100.000 64.500 1,000,000  1.88 (mg) Total Chip (Die)  Doped Silicon 7440-21-3  Doped Silicon 7440-21-3  Doped Silicon 7440-21-3  Doped Silicon 7440-21-3  Total 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 borated'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 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.com/global/eng/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' reels" may be made from PVC plastic.  Total window envelopes and belief, as of the date listed in this form. 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 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. Information 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	3.00 3.00	4
0.0645 g Total Mass  1.88 (mg) Total  Chip (Die)  Doped Silicon  T440-21-3  Doped Silicon  T440-21-3  Doped Silicon  T440-21-3  T440-50-8  Doped Silicon  T440-05-3  T440-05-3  Doped Silicon  T440-05-3  Doped Silicon  T440-05-3  Doped Silicon  T440-05-3  T440-05-3  Doped Silicon  T440-21-3  Doped Silicon	tal 100.00	<u>il</u>
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 ve 2002/95/EC (End-of-Life Vehicles (ELV) Directive).    Doped Silicon 7440-21-3	% of Total Weight	
wire Bond  or 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 obtain a test report at  Locom/global/eng/pages/offerings/findustries/chemicals/plastics/  vective "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  "reels" may be made from PVC plastic.  The product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and  palladium 7440-05-3  The product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and place in the outer b	tal 100.00	1
ul.com/global/eng/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 "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in 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 Incorporated cannot guarantee the eteness 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 rided 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	% of Total Weight	0.33
"reels" may be made from PVC plastic.  hip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in 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 Incorporated cannot guarantee the eteness 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 ation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information ided 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	98.00	
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 Incorporated cannot guarantee the teness 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 ation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information ided 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	2.00	
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 Incorporated cannot guarantee the eteness 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 lation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information rided only as estimates of the average weight of these parts and the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace	tal 100.00	1
chip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product unties 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 1 for 1 hour		1.22
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 twise, 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.		

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CROCHIP				ation Base Al oper Alloy (Cu	- ,			omogeneous Materials: s (e.g. pc boards, display	vs)	JEDEC 97 Product Markin and/or Pkg. Labeling
Semiconductor Device	Type: 28 VQFN 5x	5x0.9 (RM)								e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	26.81	(mg) Total	Mold Compound	% ot Total Weight	40.57
Silica, vitreous (or fused)	60676-86-0	Mold Compound	34.485	22.787	344,845		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	3.530	2.332	35,296		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.434	1.608	24,342		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.122	0.080	1,217		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	50.721	33.515	507,209		•	Total	100.00	
Iron	7439-89-6	Lead Frame	1.248	0.824	12,476	35.08	(mg) Total	Lead Frame	% of Total Weight	53.09
Silver	7440-22-4	Lead Frame	1.011	0.668	10,114		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.066	0.044	664		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.044	0.029	438		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.840	0.555	8,400		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.160	0.106	1,600		Phosphorous	7723-14-0	0.08	]
Silicon	7440-21-3	Chip (Die)	3.290	2.174	32,900			Total	100.00	
Gold	7440-57-5	Wire Bond	0.470	0.311	4,700	0.66	(mg) Total	Die Attach	% of Total Weight	1
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.580	1.044	15,800		Silver	7440-22-4	84.00	
		TOTALS:	100.000	66.078	1,000,000		Epoxy resin	Trade Secret	16.00	
	0.0661	g Total Mass						Total	100.00	
	as been verified via inte	ELV) Directive).  ernal design controls, supplier declarations, and substance is NOT an intentional ingredient in ti	•	est data.	S Recast	2.17	(mg) Total  Doped Silicon	7440-21-3 Total	% of Total Weight 100 100.00	3.29
emical substance is absent from the leaching Technology Incorporated's kn	as been verified via into	ernal design controls, supplier declarations, and	he semiconduc reason to beli	est data. tor device and, eve that the un	, to the best avoidable	2.17		7440-21-3	100	3.29
emical substance is absent from the l tochip Technology Incorporated's kn ty concentration of the chemical sub-	as been verified via inte list above, the chemical owledge and belief as o stance, if any, is not be set the UL94 V0 flammat	ernal design controls, supplier declarations, and substance is NOT an intentional ingredient in the of the date of this document, there is no credible low the threshold of regulatory concern for any collity standard for plastics. You can access the U	he semiconduc reason to belic regulatory sch	est data. tor device and, eve that the un eme world-wide	, to the best avoidable e.	0.31		7440-21-3	100	0.47
emical substance is absent from the l tochip Technology Incorporated's kni ty concentration of the chemical sub- g compounds used by Microchip me port at http://ul.com/global/eng/pages	as been verified via into list above, the chemical owledge and belief as o stance, if any, is not be set the UL94 V0 flammat s/offerings/industries/cl c product is shipped are	ernal design controls, supplier declarations, and substance is NOT an intentional ingredient in the fithe date of this document, there is no credible low the threshold of regulatory concern for any bility standard for plastics. You can access the Lemicals/plastics/	he semiconduce reason to belic regulatory school	tor device and, eve that the underme world-wide of databases to	, to the best avoidable e. o obtain a		Doped Silicon	7440-21-3 Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
emical substance is absent from the leochip Technology Incorporated's known to concentration of the chemical subsective "tubes" in which the specific gilip on the outer box and certain "thip Technology Incorporated believe orated's semiconductor devices in the m. Microchip Technology Incorporate and semiconductor devices in the m. Microchip Technology Incorporate and some information may not have tes of the average weight of these pa	as been verified via interior as the chemical owledge and belief as c stance, if any, is not be set the UL94 V0 flammats/offerings/industries/clc product is shipped are reels" may be made from the interioriginal packing mated cannot guarantee the stata Sheets provided by subserts and the average weight of the chemical state of the control of the con	ernal design controls, supplier declarations, and substance is NOT an intentional ingredient in the fithe date of this document, there is no credible low the threshold of regulatory concern for any bility standard for plastics. You can access the Lemicals/plastics/	he semiconduc reason to belic regulatory schi JL iQTM family Vindow envelop HS in Microchip reledge and belic m because it hoften protectes. Information is sonents. These	tor device and, when the universe world-wide of databases to be "Technology ef, as of the database ben compilified with the database ben compilified with the database ben compilified with the database of the database provided only	, to the best avoidable e. o obtain a old the te listed in led based ure as trade as		Doped Silicon	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
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emical substance is absent from the leading prochip Technology Incorporated's known to concentration of the chemical subseption of the chemical subsets of the chemical sub	as been verified via interpretation of the common of the c	substance is NOT an intentional ingredient in the substance is NOT an intentional ingredient in the fit the date of this document, there is no credible low the threshold of regulatory concern for any politity standard for plastics. You can access the themicals/plastics/ employed from polyvinyl chloride (PVC) plastic. "Vernetical from polyvinyl chloride (PVC) plastic." on PVC plastic.  s form concerning substances restricted by Rotterials is true and correct to the best of its known the completeness and accuracy of data in this for raw material suppliers. Supplier information is contract assemblers and raw material suppliers contract assemblers and raw material suppliers gipt of anticipated significant toxic metals comp within silicon devices (silicon IC) in the finisher, express or implied, with respect to the information of the proportion of the subsidiaries are considered and its	he semiconductor reason to beliate regulatory school in regulatory in re	tor device and, see that the unitered world-wide of databases to bes" used to he as been compile from disclosure provided only estimates do not in this declaration of the database that the provided only estimates do not in this declaration of the database that the provided only estimates do not not the database that the provided only estimates do not not the database that the provided only estimates do not not not not not not not not not no	to the best avoidable e. o obtain a old the te listed in led based as a led to the led to the led to the led to the led terms and terms and lect or	0.31	Doped Silicon  (mg) Total  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 100.00 100.00 % of Total Weight	1.58

28 VQFN 10:20 AM : 5/6/2014

AICROCHIP  Semiconductor Device	Semiconductor Device Type: MQ 28 VQFN 5x5x0.9 (MW)  "Contained In"						JEDEC 97 Product Marking and/or Pkg. Labeling			
Scillionidation Bevice	Type. Mg 20 Tg/H	` '	% Total							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		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		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.066	0.065	664		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	0.560	0.545	5,600		Zinc	7440-66-6	0.13	
Epoxy Resin	Trade Secret	Die Attach	0.140	0.136	1,400		Phosphorous	7723-14-0	0.08	
Silicon	7440-21-3	Chip (Die)	3.300	3.214	33,000			Total	100.00	-
Gold	7440-57-5	Wire Bond	0.500	0.487	5,000	0.68	(mg) Total	Die Attach	% of Total Weight	0.7
Nickel	7440-02-0	Plating on external leads (pins)	1.656	1.613	16,560		Silver	7440-22-4	80	
Palladium	7440-05-3	Plating on external leads (pins)	0.092	0.090	920		Epoxy Resin	Trade Secret	20	
Gold				0.000	000	1			400.00	J
Gold	7440-57-5	Plating on external leads (pins)	0.092	0.090	920			Total	100.00	
Gold	7440-57-5		0.092 <b>100.000</b>	97.400	1,000,000	3.21	Total (mg)			3.3
semiconductor device and its homogenou	0.0974 g 1 s materials comply with EU Dir	TOTALS:	100.000	97.400	1,000,000	3.21	Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	3.3
semiconductor device and its homogenou EU Directive 2002/53/EC (End-of-Life Vehic	0.0974 g T s materials comply with EU Dir les (ELV) Directive).	TOTALS:  otal Mass ective 2002/95/EC (RoHS Directive), EU Directive	100.000 2011/65/EU (F	97.400	1,000,000	3.21	Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight 100 100.00	3.3
semiconductor device and its homogenou EU Directive 2002/53/EC (End-of-Life Vehic apliance with the above EU Directives has b chemical substance is absent from the list a hnology Incorporated's knowledge and belic mical substance, if any, is not below the thr	0.0974 g T s materials comply with EU Dir les (ELV) Directive). een verified via internal desigr bove, the chemical substance of as of the date of this docum eshold of regulatory concern f	TOTALS:  Total Mass  Total Mas	100.000 2011/65/EU (Final test data. Suctor device a le unavoidable	97.400 RoHS Recast E and, to the bes impurity conc	1,000,000 Directive) and st of Microchip			Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
semiconductor device and its homogenou EU Directive 2002/53/EC (End-of-Life Vehic apliance with the above EU Directives has b chemical substance is absent from the list a hnology Incorporated's knowledge and belic mical substance, if any, is not below the thr	0.0974 g 1 s materials comply with EU Dir les (ELV) Directive). een verified via internal desigr bove, the chemical substance af as of the date of this docum eshold of regulatory concern f e UL94 V0 flammability standa	TOTALS:  Total Mass  ective 2002/95/EC (RoHS Directive), EU Directive  n controls, supplier declarations, and /or analytic  is NOT an intentional ingredient in the semiconcent, there is no credible reason to believe that the	100.000 2011/65/EU (Final test data. Suctor device a le unavoidable	97.400 RoHS Recast E and, to the bes impurity conc	1,000,000 Directive) and st of Microchip		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
semiconductor device and its homogenou EU Directive 2002/53/EC (End-of-Life Vehici pliance with the above EU Directives has bethemical substance is absent from the list anology Incorporated's knowledge and belinical substance, if any, is not below the thrig compounds used by Microchip meet the lifu com/global/eng/pages/offerings/industrorective "tubes" in which the specific protective "tubes" in which tubes "tubes" in which the specific protective "tubes" in which tubes "tu	0.0974 g T s materials comply with EU Dir les (ELV) Directive). een verified via internal design above, the chemical substance of as of the date of this documeshold of regulatory concern for the UL94 V0 flammability standaries/chemicals/plastics/	TOTALS:  Total Mass  Total Mas	100.000  2011/65/EU (F al test data. ductor device a e unavoidable	97.400  ROHS Recast D  and, to the bes impurity concests to obtain a t	1,000,000  Directive) and  st of Microchip centration of the		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	
semiconductor device and its homogenou EU Directive 2002/53/EC (End-of-Life Vehica ppliance with the above EU Directives has bethemical substance is absent from the list a hnology Incorporated's knowledge and belical substance, if any, is not below the thrigh compounds used by Microchip meet the strip compounds used by Microchip meet the strip compounds in which the specific proper box and certain "reels" may be made from the strip conductor devices in their original packing hnology Incorporated cannot guarantee the sty Data Sheets provided by raw material survided by subcontract assemblers and raw material survivals.	o.0974 g T s materials comply with EU Dir les (ELV) Directive). een verified via internal design bove, the chemical substance of as of the date of this documeshold of regulatory concern f e UL94 V0 flammability standaries/chemicals/plastics/ duct is shipped are made from the PVC plastic. e information in this form condumentals is true and correct of completeness and accuracy of popliers. Supplier information is taterial suppliers. Information is	TOTALS:  Total Mass  rective 2002/95/EC (RoHS Directive), EU Directive a controls, supplier declarations, and /or analytic is NOT an intentional ingredient in the semiconc ent, there is no credible reason to believe that the or any regulatory scheme world-wide.  Indeed for plastics. You can access the UL iQTM fam	100.000  2011/65/EU (F al test data. ductor device a e unavoidable illy of database lopes" used to hip Technolog date listed in ti based on the is and some in ght of these pa	97.400 RoHS Recast E and, to the bes impurity conc es to obtain a t b hold the pace ly Incorporate his form. Micro ranges provid formation may rts and the ave	1,000,000 Directive) and st of Microchip centration of the test report at king slip on the d's ochip led in Material y not have been erage weight of	0.49	(mg) Total Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total  Plating on external	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.5
semiconductor device and its homogenou EU Directive 2002/53/EC (End-of-Life Vehica pliance with the above EU Directives has be chemical substance is absent from the list a chnology Incorporated's knowledge and belicated by the compounds used by Microchip meet the civilui.com/global/eng/pages/offerings/industry protective "tubes" in which the specific proter box and certain "reels" may be made from cochip Technology Incorporated believes the iconductor devices in their original packing halology Incorporated cannot guarantee the ty Data Sheets provided by raw material survided by subcontract assemblers and raw microchip Technology Incorporated cannot guarantee the conductor devices in their original packing their original	o.0974 g T s materials comply with EU Dir les (ELV) Directive). een verified via internal design above, the chemical substance of as of the date of this docume eshold of regulatory concern f e UL94 V0 flammability standa ies/chemicals/plastics/ oduct is shipped are made from the PVC plastic. e information in this form concumaterials is true and correct completeness and accuracy o ppliers. Supplier information is taterial suppliers. Information is staterial suppliers. Information is concurred to the concurred of	TOTALS:  Total Mass  rective 2002/95/EC (RoHS Directive), EU Directive a controls, supplier declarations, and /or analytic is NOT an intentional ingredient in the semiconc ent, there is no credible reason to believe that th or any regulatory scheme world-wide. In for plastics. You can access the UL iqTM fam in polyvinyl chloride (PVC) plastic. "Window enve cerning substances restricted by RoHS in Microc to the best of its knowledge and belief, as of the of data in this form because it has been compiled so often protected from disclosure as trade secret is provided only as estimates of the average weig de trace levels of dopants, metals, and non-metal or implied, with respect to the information providu- ubsidiaries are contained in Microchip's standard les.	al test data. ductor device a le unavoidable illy of database lopes" used to hip Technolog date listed in the las and some in pht of these pa al materials co ed in this decla d terms and co	97.400 RoHS Recast D and, to the bes impurity conc as to obtain a to b hold the pack its form. Micro ranges provid formation may rts and the av intained within aration. The ex inditions of sal	1,000,000 Directive) and st of Microchip centration of the test report at king slip on the d's ochip led in Material y not have been erage weight of a silicon devices scclusive, limited le. These are	0.49	(mg) Total  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total  Plating on external leads (pins)	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00 % of Total Weight	0.5
semiconductor device and its homogenou EU Directive 2002/53/EC (End-of-Life Vehici ppliance with the above EU Directives has be chemical substance is absent from the list a hoology Incorporated's knowledge and belimical substance, if any, is not below the thrighting compounds used by Microchip meet the tilful.com/global/eng/pages/offerings/industrictive "tubes" in which the specific proprotective and certain "reels" may be made from the proposition of the proprotective substantial proposition and the proposition of the propositi	o.0974 g T s materials comply with EU Dir les (ELV) Directive). een verified via internal design bove, the chemical substance of as of the date of this docum eshold of regulatory concern f e UL94 V0 flammability standa ries/chemicals/plastics/ oduct is shipped are made from n PVC plastic. e information in this form conc materials is true and correct of completeness and accuracy of popliers. Supplier information is aterial suppliers. Information is s. These estimates do not inclu- rovide any warranty, express o nology Incorporated and its si acknowledgement, and invoic updates or changes to Materia or third parties as a result of th	TOTALS:  Total Mass  rective 2002/95/EC (RoHS Directive), EU Directive in controls, supplier declarations, and /or analytic is NOT an intentional ingredient in the semiconcent, there is no credible reason to believe that the or any regulatory scheme world-wide.  Independent of the plastics. You can access the UL iQTM fam on polyvinyl chloride (PVC) plastic. "Window envertering substances restricted by RoHS in Microcto the best of its knowledge and belief, as of the off data in this form because it has been compiled of data in this form because it has been compiled so often protected from disclosure as trade secret is provided only as estimates of the average weig detrace levels of dopants, metals, and non-metion implied, with respect to the information providuals in the content of the liable for e users' reliance on the information in Material Centent of the content of the content of the liable for eusers' reliance on the information in Material Centent of the content of the conten	a 2011/65/EU (Final test data.  Buctor device are unavoidable lily of database lopes" used to hip Technolog date listed in the las and some in ght of these paral materials coed in this declaration of the last o	97.400 RoHS Recast E and, to the bes impurity conc es to obtain a t b hold the pack y Incorporate his form. Micro ranges provid formation may rts and the av ntained within aration. The ex nditions of sal , direct or indi	1,000,000 Directive) and st of Microchip centration of the dest report at king slip on the d's ochip leed in Material y not have been erage weight of a silicon devices cclusive, limited le. These are rect,	0.49	Doped Silicon   (mg) Total   Gold   (mg) Total   Nickel	Chip (Die)	% of Total Weight 100  100.00  % of Total Weight 100.00  4 of Total Weight 90.00	0.5

28 VQFN 5x5x0.9 10:21 AM : 5/6/2014

AICROCHIP  Semiconductor Devic	e Type: EZK 32	VQFN 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			Total	100.00	1
Iron	7439-89-6	Lead Frame	1.529	0.973	15,291	41.38	(mg) Total	Lead Frame	% of Total Weight	65.07
Silver	7440-22-4	Lead Frame	1.240	0.788	12,396		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.081	0.052	813		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.054	0.034	537		Silver	7440-22-4	1.91	
Silver	7440-22-4	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	0.035	0.002	147		Tilospilorous	Total	100.00	
	96-48-0	Die Attach	0.015	0.009	147	0.31	(mg) Total	Die Attach	% of Total Weight	0.49
Gamma-butyrolactone						0.31				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 Tin	7440-05-3 7440-31-5	Wire Bond palladium coated copper (CuPd)	0.012 2.750	0.007 1.749	116 27.500		Metal oxide	Trade Secret 96-48-0	3	
ıın	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour					Gamma-butyrolactone			
		TOTALS:	100.000	63.600	1,000,000			Total	100.00	
		g Total Mass				1.53	Total (mg)	Chip (Die)	% of Total Weight	2.41
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	comply with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ctive) and with	ı EU	1.53	Total (mg)  Doped Silicon	7440-21-3 Total	% of Total Weight 100 100.00	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 proprorated's knowledge and belief as of the date of this	comply with EU Directive in .  d via internal design controphemical substance is NOT document, there is no cred	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 conce	, to the best o	of Microchip Te	echnology	0.42		7440-21-3	100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the opporated'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	comply with EU Directive of the complex of the comp	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 conce	, to the best ontration of the	of Microchip Te e chemical sub	echnology		Doped Silicon	7440-21-3  Total  Wire Bond palladium coated copper	100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance with the above EU Directives has been verified chemical substance is absent from the list above, the opporated'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 VO c://ul.com/global/eng/pages/offerings/industries/chemics/	comply with EU Directive of the comply with EU Directive of the control of the complete of the	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 conce d-wide.	I, to the best o ntration of the	of Microchip Te e chemical sub st report at	echnology stance, if		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance with the above EU Directives has been verified chemical substance is absent from the list above, the opporated'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 Vo://ul.com/global/eng/pages/offerrings/industries/chemic protective "tubes" in which the specific product is shad certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatheir original packing materials is true and correct to the inpleteness and accuracy of data in this form because in opplier information is often protected from disclosure as	comply with EU Directive of divide internal design control chemical substance is NOT document, there is no cred any regulatory scheme world flammability standard for pals/plastics/ ipped are made from polyving on in this form concerning a best of its knowledge and thas been compiled based trade secrets and some in eight of these parts and the	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 conced-wide.  clastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Technon on the ranges provided in Material Safety Data Sheets proformation may not have been provided by subcontract asses a verage weight of anticipated significant toxic metals co	I, to the best on tration of the oobtain a tese old the packin ncorporated's logy Incorpor wided by raw remblers and remblers and remblers and remoters and remot	of Microchip Te e chemical sub it report at ing slip on the co is semiconduct rated cannot g material suppli aw material su	echnology stance, if   outer box  or devices  uarantee the  iers.  ippliers.		Doped Silicon  (mg) Total  Copper	7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance 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 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 shorted in the product is the certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatineir original packing materials is true and correct to the inpleteness and accuracy of data in this form because in pilier information is often protected from disclosure as implier information is orben protected from disclosure as immatton is provided only as estimates of the average we ude trace levels of dopants, metals, and non-metal marochip Technology Incorporated does not provide any	comply with EU Directive of division and a complete of the microstate of the microst	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 conced-wide.  clastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Technon on the ranges provided in Material Safety Data Sheets proformation may not have been provided by subcontract asses a verage weight of anticipated significant toxic metals co	I, to the best on tration of the oo obtain a tes old the packin incorporated's slogy incorpor wided by raw remblers and remponents. The tion. The excli	of Microchip To e chemical sub- it report at ag slip on the of a semiconduct rated cannot g material suppli aw material suppli aw material suppli aw material suspesses estimates	puter box or devices uarantee the iers. do not		Doped Silicon  (mg) Total  Copper Palladium	Total  Wire Bond palladium coated copper (CuPd)  7440-50-8  7440-05-3	100 100.00 % of Total Weight 98	0.66
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance 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 in, 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 she certain "reels" may be made from PVC plastic.  rochip Technology Incorporated believes the informatineir original packing materials is true and correct to the pleteness and accuracy of data in this form because it opplier information is often protected from disclosure as immation is provided only as estimates of the average we due trace levels of dopants, metals, and non-metal marochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorporated stations, sales order acknowledgement, and invoices.	d via internal design control chemical substance is NOT document, there is no cred iny regulatory scheme wor' flammability standard for pals/plastics/ ipped are made from polyv on in this form concerning to best of its knowledge and that has been compiled based that trade secrets and some in reight of these parts and the terials contained within sili warranty, express or implied and its subsidiaries are or changes to Material Conte the users' reliance on the i	Diozo/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), EU Directive 2011/65/EU (RoHS Diversity), Supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conced-wide.  Illustics. You can access the UL iQTM family of databases the control of t	i, to the best on tration of the coordinates of the packin acceptance of the packin or	of Microchip To e chemical sub- streport at ang slip on the co semiconduct rated cannot g material suppli aw material su- lese estimates usive, limited re provided in ct, consequent	echnology stance, if outer box or devices uarantee the iers. uppliers. do not product Microchip's	0.42	Doped Silicon  (mg) Total  Copper Palladium	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  7440-31-5	100 100.00 % of Total Weight 98 2 100.00 % of Total Weight	2.75
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive) impliance with the above EU Directives has been verified chemical substance is absent from the list above, the opporated'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 Vo://ul.com/global/eng/pages/offerrings/industries/chemic protective "tubes" in which the specific product is shall certain "reels" may be made from PVC plastic. rochip Technology Incorporated believes the informatineir original packing materials is true and correct to the hipleteness and accuracy of data in this form because in opplier information is often protected from disclosure asormation is provided only as estimates of the average was undertrace levels of dopants, metals, and non-metal marochip Technology Incorporated does not provide any ranties provided by Microchip Technology Incorporate stations, sales order acknowledgement, and invoices. or rochip disclaims any duty to notify users of updates on erwise, suffered by users or third parties as a result of	d via internal design control chemical substance is NOT document, there is no cred iny regulatory scheme wor' flammability standard for pals/plastics/ ipped are made from polyv on in this form concerning to best of its knowledge and that has been compiled based that trade secrets and some in reight of these parts and the terials contained within sili warranty, express or implied and its subsidiaries are or changes to Material Conte the users' reliance on the i	Divoz/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 conced-d-wide.  Plastics. You can access the UL iQTM family of databases to the substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Technology I belief, as of the date listed in this form. Microchip Technology I on the ranges provided in Material Safety Data Sheets proformation may not have been provided by subcontract asse average weight of anticipated significant toxic metals co-con devices (silicon IC) in the finished parts.  Id, with respect to the information provided in this declara ontained in Microchip's standard terms and conditions of the Declarations and shall not be liable for any damages, dinteres.	i, to the best on tration of the coordinates of the packin acceptance of the packin or	of Microchip To e chemical sub- streport at ang slip on the co semiconduct rated cannot g material suppli aw material su- lese estimates usive, limited re provided in ct, consequent	echnology stance, if outer box or devices uarantee the iers. uppliers. do not product Microchip's	0.42	Doped Silicon  (mg) Total  Copper Palladium  (mg) Total	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 2 100.00 % of Total Weight	2.75

EZK 10:21 AM : 5/6/2014

MICROCHIP  Semiconductor Device Type:	· AF7C 36 (lood)	VQFN 6x6x0.9 (RP/RQ)		ination Base opper Alloy (				ogeneous Materials: g. pc boards, displays	·)	JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Semiconductor Device Type.	ALZC 30 (Lead)	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	26.10	(mg) Total	Mold Compound	% ot Total Weight	17.33
Silica, vitreous (or fused)	60676-86-0	Mold Compound	14.731	22.184	147,305		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	1.508	2.271	15,077		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	1.040	1.566	10,398		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.052	0.078	520		Carbon Black	1333-86-4	0.30	j
Copper Iron	7440-50-8 7439-89-6	Lead Frame Lead Frame	72.322 1.779	108.917 2.679	723,219 17,790	444.00	( ) <b>T</b> . ( . )	Total	100.00	
Silver	7440-22-4	Lead Frame	1.779	2.079	14,421	114.00	(mg) Total	Lead Frame	% of Total Weight	75.7
Zinc	7440-22-4	Lead Frame Lead Frame	0.095	0.143	946		Copper	7440-50-8 7439-89-6	95.54 2.35	i
Phosphorous	7723-14-0	Lead Frame Lead Frame	0.095	0.143	946 625		Iron Silver	7439-89-6 7440-22-4	2.35 1.91	i
Silver	7440-22-4	Die Attach	0.143	0.094	1.425		Zinc	7440-66-6	0.13	i
Epoxy resin	Trade Secret	Die Attach	0.048	0.213	475		Phosphorous	7723-14-0	0.08	i
Silicon	7440-21-3	Chip (Die)	4.210	6.340	42,100		Filospilotous	Total	100.00	i
Copper	7440-57-5	Wire Bond	0.764	1.151	7,644	0.29	(mg) Total	Die Attach	% of Total Weight	
Palladium	7440-05-3	Wire Bond	0.016	0.023	156	0.20	Silver	7440-22-4	75.00	00
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.790	2.696	17.900		Epoxy resin	Trade Secret	25.00	i
• • • • • • • • • • • • • • • • • • • •		TOTALS:		150.600	1,000,000			Total	100.00	1
	0.1506 g To					6.34	(mg) Total	Chip (Die)	% of Total Weight	4.21
s semiconductor device and its homogenous materials comply with			RoHS Recast	Directive) and	with EU					ĺ
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		. , ,		•			Doped Silicon	7440-21-3	100	i
npliance with the above EU Directives has been verified via interna	al design controls, suppli	er declarations, and /or analytical test data.					<u> </u>	Total	100.00	ı
chemical substance is absent from the list above, the chemical su orporated's knowledge and belief as of the date of this document, t , is not below the threshold of regulatory concern for any regulator	there is no credible reaso					1.17	(mg) Total	Wire Bond	% of Total Weight	0.78
Iding compounds used by Microchip meet the UL94 V0 flammability	,	ou can access the UL iQTM family of databas	es to obtain a							
p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/	•		cs to obtain a	test report at			Copper	7440-57-5	98.00	
e protective "tubes" in which the specific product is shipped are ma		de (PVC) plastic. "Window envelopes" used t					Copper	7440-57-5 7440-05-3	98.00	
p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics.  te protective "tubes" in which the specific product is shipped are mid certain "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the information in this for their original packing materials is true and correct to the best of its ecompleteness and accuracy of data in this form because it has be applier information is often protected from disclosure as trade secretormation is provided only as estimates of the average weight of the clude trace levels of dopants, metals, and non-metal materials contains.	ade from polyvinyl chlor orm concerning substanc knowledge and belief, as en compiled based on th ets and some information see parts and the average	es restricted by RoHS in Microchip Technolog s of the date listed in this form. Microchip Tec e ranges provided in Material Safety Data She n may not have been provided by subcontract b weight of anticipated significant toxic metals	o hold the pace gy Incorporate hnology Incorets provided assemblers a	cking slip on t ed's semicond porated cann by raw materi ind raw materi	ne outer box fuctor devices of guarantee al suppliers. al suppliers.					
e protective "tubes" in which the specific product is shipped are middertain "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the information in this for their original packing materials is true and correct to the best of its ecompleteness and accuracy of data in this form because it has berpolier information is often protected from disclosure as trade secre ormation is provided only as estimates of the average weight of the	ade from polyvinyl chlor orm concerning substanc knowledge and belief, as en compiled based on th sts and some information use parts and the average ained within silicon devic xpress or implied, with re	tes restricted by RoHS in Microchip Technologs of the date listed in this form. Microchip Tece ranges provided in Material Safety Data She may not have been provided by subcontract weight of anticipated significant toxic metals les (silicon IC) in the finished parts.	o hold the pace gy Incorporate hnology Incor lets provided assemblers a s components laration. The e	cking slip on t ed's semicond rporated cann by raw materi nd raw materi . These estim exclusive, limi	the outer box uctor devices bot guarantee al suppliers. al suppliers. ates do not	2.70	Palladium	7440-05-3	2.00	
e protective "tubes" in which the specific product is shipped are medicertain "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the information in this for their original packing materials is true and correct to the best of its completeness and accuracy of data in this form because it has be pplier information is often protected from disclosure as trade secre ormation is provided only as estimates of the average weight of the lude trace levels of dopants, metals, and non-metal materials contactorichip Technology Incorporated does not provide any warranty, eyrranties provided by Microchip Technology Incorporated and its su	ade from polyvinyl chlor orm concerning substance knowledge and belief, as en compiled based on the sts and some information use parts and the average ained within silicon device xpress or implied, with re ibsidiaries are contained	es restricted by RoHS in Microchip Technolog s of the date listed in this form. Microchip Tec er anges provided in Material Safety Data She in may not have been provided by subcontract e weight of anticipated significant toxic metals es (silicon IC) in the finished parts. espect to the information provided in this deci in Microchip's standard terms and conditions ations and shall not be liable for any damages	o hold the pace gy Incorporate hnology Incorporate tests provided assemblers as components laration. The eart of sale. These s, direct or incorporate tests and the pace of th	cking slip on to ed's semicond porated cann by raw materi nd raw materi . These estim exclusive, limit ise are provider	uctor devices ot guarantee al suppliers. al suppliers. ates do not ted product d in	2.70	Palladium	7440-05-3  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	2.00	
protective "tubes" in which the specific product is shipped are micertain "reels" may be made from PVC plastic.  rochip Technology Incorporated believes the information in this foneir original packing materials is true and correct to the best of its completeness and accuracy of data in this form because it has beinglier information is often protected from disclosure as trade secret mation is provided only as estimates of the average weight of the ude trace levels of dopants, metals, and non-metal materials contarochip Technology Incorporated does not provide any warranty, examites provided by Microchip Technology Incorporated and its su cochip's quotations, sales order acknowledgement, and invoices.  rochip disclaims any duty to notify users of updates or changes to erwise, suffered by users or third parties as a result of the users' remaining the provided of the prov	ade from polyvinyl chlor orm concerning substance knowledge and belief, as en compiled based on the sts and some information use parts and the average ained within silicon device xpress or implied, with re ibsidiaries are contained	es restricted by RoHS in Microchip Technolog s of the date listed in this form. Microchip Tec er anges provided in Material Safety Data She in may not have been provided by subcontract e weight of anticipated significant toxic metals es (silicon IC) in the finished parts. espect to the information provided in this deci in Microchip's standard terms and conditions ations and shall not be liable for any damages	o hold the pace gy Incorporate hnology Incorporate tests provided assemblers as components laration. The eart of sale. These s, direct or incorporate tests and the pace of th	cking slip on to ed's semicond porated cann by raw materi nd raw materi . These estim exclusive, limit ise are provider	uctor devices ot guarantee al suppliers. al suppliers. ates do not ted product d in	2.70	Palladium  (mg) Total	7440-05-3  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.00 100.00 % of Total Weight	1.79

36 VQFN 10:21 AM : 5/6/2014

AICROCHIP  Somiconductor Davi	ice Type: 48 VQFN 7×7×	-0.0 (PS)		ination Base opper Alloy (				ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Dev	ce Type: 46 VQFN 7x7x	"Contained In"	% Total	I	1					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	14.73	(mg) Total	Mold Compound	% ot Total Weight	34.74
Silica, vitreous (or fused)	60676-86-0	Mold Compound	29.529	12.520	295,290		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	3.022	1.281	30,224		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.084	0.884	20,844		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.104	0.044	1,042		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	54.093	22.936	540,933			Total		
Iron	7439-89-6	Lead Frame	1.331	0.564	13,306	24.01	(mg) Total	Lead Frame	% of Total Weight	56.62
Silver	7440-22-4	Lead Frame	1.079	0.457	10,786		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.071	0.030	708		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.047	0.020	467		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.969	0.411	9,694		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.301	0.128	3,013		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.039	0.017	393			Total	100.00	
Silicon	7440-21-3	Chip (Die)	4.150	1.760	41,500	0.56	(mg) Total	Die Attach	% of Total Weight	1.31
Gold	7440-57-5	Wire Bond	1.310	0.555	13,100		Silver	7440-22-4	74.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.870	0.793	18,700		Epoxy resin	Trade Secret	23.00	
		TOTALS:	100.000	42.400	1,000,000		Metal oxide	Trade Secret	3.00	
	0.0424	g Total Mass						Total	100.00	
s semiconductor device and its homogenous materials Directive 2002/53/EC (End-of-Life Vehicles (ELV) Direc	comply with EU Directive 20	Y	5/EU (RoHS I	Recast Directi	ive) and with	1.76	(mg) Total	Chip (Die)	% of Total Weight	4.15
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Direc inpliance with the above EU Directives has been verified.	comply with EU Directive 20 tive). d via internal design controls	02/95/EC (RoHS Directive), EU Directive 2011/6 s, supplier declarations, and /or analytical test of	lata.		,	1.76	(mg) Total  Doped Silicon			4.15
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Direc npliance with the above EU Directives has been verifie chemical substance is absent from the list above, the hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of ra ding compounds used by Microchip meet the UL94 VO	comply with EU Directive 20 tive).  d via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any re flammability standard for pla	02/95/EC (RoHS Directive), EU Directive 2011/6 s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of e is no credible reason to believe that the unaver- orgulatory scheme world-wide.	data. levice and, to pidable impur	the best of Nitrity concentra	Microchip tion of the	0.56	,	Chip (Die) 7440-21-3	% of Total Weight	4.15
	comply with EU Directive 20 d via internal design controls chemical substance is NOT a d date of this document, there egulatory concern for any re flammability standard for pla cals/plastics/ ipped are made from polyvin	202/95/EC (RoHS Directive), EU Directive 2011/6 s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of e is no credible reason to believe that the unaver- egulatory scheme world-wide. astics. You can access the UL iQTM family of de	data. levice and, to bidable impur atabases to o	the best of N rity concentra btain a test re	Microchip tion of the eport at		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight  100  100.00	
Directive 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 hinology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of riding compounds used by Microchip meet the UL94 V0 or/ful.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sh	comply with EU Directive 20 d via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any re flammability standard for pla cals/plastics/ ipped are made from polyvin ction in this form concerning s ect to the best of its knowled in this form because it has b otected from disclosure as tr vided only as estimates of th	302/95/EC (RoHS Directive), EU Directive 2011/6 s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of the isno credible reason to believe that the unavergulatory scheme world-wide.  astics. You can access the UL iQTM family of direction of the intention of the in	data.  levice and, to bidable impuratabases to oused to hold hnology Inco Microchip Te Material Saff ve been provie weight of a	the best of N ity concentral btain a test re the packing s proprated's se schnology Inc ety Data Shee ded by subconticipated sig	dicrochip tion of the eport at slip on the emiconductor orporated ts provided intract inificant toxic		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight  100  100.00  % of Total Weight	·
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive poliance with the above EU Directives has been verifie chemical substance is absent from the list above, the hinology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of riding compounds used by Microchip meet the UL94 Voc.//ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is sher box and certain "reels" may be made from PVC plas rochip Technology Incorporated believes the informatices in their original packing materials is true and corrunot guarantee the completeness and accuracy of data raw material suppliers. Information is often premblers and raw material suppliers. Information is protats components. These estimates do not include trace	comply with EU Directive 20 tive).  d via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any reflammability standard for placals/plastics/ ipped are made from polyvinitic.  on in this form concerning sect to the best of its knowled in this form because it has totected from disclosure as tryided only as estimates of the levels of dopants, metals, and warranty, express or implied or or porated and its subsidiaries.	202/95/EC (RoHS Directive), EU Directive 2011/6 s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of the isno credible reason to believe that the unavergulatory scheme world-wide.  202 astics. You can access the UL iQTM family of displaying the intention of the	data.  levice and, to bidable impuratabases to o used to hold hnology Inco Microchip Te Material Safve been provie weight of a devices (silicitis declaration	the best of M rity concentra btain a test re the packing s exported's se exthology inc to Data Shee ded by subco nticipated sig con IC) in the	dicrochip tion of the eport at slip on the emiconductor corporated ts provided intract inificant toxic finished ve, limited		(mg) Total  Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight  100  100.00  % of Total Weight  100.00	·
Directive 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 hnology Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of r 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 sher box and certain "reels" may be made from PVC plas rochip Technology Incorporated believes the informatices in their original packing materials is true and corrunt guarantee the completeness and accuracy of data aw material suppliers. Supplier information is often premblers and raw material suppliers. Information is protals components. These estimates do not include trace its.  rochip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated Description in the complete information is often premblers and raw material suppliers. Information is protable to the complete information is protable to the complete information is protable to the complete information is often premblers and raw material suppliers. Information is protable to the complete information is often premblers and raw material suppliers. Information is protable to the complete information is often premblers and raw material suppliers. Information is often premblers and raw material suppliers information is protable to the complete information in the complete information is often premblers.	comply with EU Directive 20 tive).  d via internal design controls chemical substance is NOT a clate of this document, there egulatory concern for any re flammability standard for pla cals/plastics/ ipped are made from polyvin tic. on in this form concerning s sect to the best of its knowled in this form because it has be otected from disclosure as tr vided only as estimates of th levels of dopants, metals, an warranty, express or implied orporated and its subsidiarie dgement, and invoices.  Thanges to Material Conten of the users' reliance on the	202/95/EC (RoHS Directive), EU Directive 2011/6 25, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of the is no credible reason to believe that the unaverage of the image of th	data.  levice and, to coldable impuratabases to or used to hold hnology Inco Microchip To Material Safe been provible weight of a devices (silic is declaration and condition mages, direc	the best of M rity concentral btain a test re- the packing s proporated's se- sechnology Ince ty Data Shee ded by subco- goon IC) in the m. The exclusi- ns of sale. Th	flicrochip tition of the eport at elip on the emiconductor corporated ets provided entract infificant toxic finished ese are consequential	0.56	(mg) Total  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	% of Total Weight 100 100.00  % of Total Weight 100.00 100.00	1.31

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MICROCHIP Semiconductor Device	ce Type: ABZJ 56 V	QFN 8x8x0.9 (RT)		nation Base A pper Alloy (C	,		Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total		1	74.48	(mg) Total	Mold Compound	% ot Total Weight	40.82
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	74.40	(ilig) rotal	wiola Compound	% of Total Weight	40.02
Silica, vitreous (or fused)	60676-86-0	Mold Compound	34.697	63.308	346,970		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	3.551	6.480	35,513		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.449	4.469	24,492		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.122	0.223	1,225		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	50.558	92.249	505,584			Total		
Iron	7439-89-6	Lead Frame	1.244	2.269	12,436	96.56	(mg) Total	Lead Frame	% of Total Weight	52.92
Silver	7440-22-4	Lead Frame	1.008	1.839	10,081		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.066	0.121	662		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.044	0.080	437		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.120	0.219	1,200		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.030	0.055	300		Phosphorous	7723-14-0	0.08	
Silicon	7440-21-3	Chip (Die)	2,500	4.562	25.000			Total	100.00	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	1.857	3.388	18.569	0.27	(mg) Total	Die Attach	% of Total Weight	0.15
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.033	0.060	331		Silver	7440-22-4	80	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.720	3.138	17,200		Epoxy resin	Trade Secret	20	
	7 1 10 0 1 0	TOTALS:	100.000	182.460	1.000.000		грому госин	Total		
	0.19246	a Total Mass		.0200	.,000,000	4.56	Total (mg)	Chip (Die)	% of Total Weight	2.5
		J				4.30	i otai (ilig)	Cilip (Die)	76 OF FOLAH WEIGHT	2.5
			11 /D 110 D	( D: (: )	1 24 511					
his semiconductor device and its homogenous materials irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive		002/95/EC (RoHS Directive), EU Directive 2011/65/E	U (RoHS Reca	st Directive) a	nd with EU		Doped Silicon	7440-21-3	100	
	).	, ,	•	st Directive) a	nd with EU		Doped Silicon	7440-21-3 <b>Total</b>		
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 echnology Incorporated's knowledge and belief as of the	). d via internal design control chemical substance is NOT e date of this document, ther	ls, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi re is no credible reason to believe that the unavoida	i. ce and, to the	best of Microc	:hip	3.45	Doped Silicon			1.89
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive	).  d via internal design control chemical substance is NOT date of this document, ther egulatory concern for any re flammability standard for pl	ls, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi re is no credible reason to believe that the unavoida egulatory scheme world-wide.	ce and, to the	best of Microconcentration o	:hip of the	3.45		Total Wire Bond palladium coated	100.00	1.89
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 dechnology incorporated's knowledge and belief as of the hemical substance, if any, is not below the threshold of rololding compounds used by Microchip meet the UL94 VO	). d via internal design control chemical substance is NOT date of this document, ther egulatory concern for any re flammability standard for pl cals/plastics/	Is, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi re is no credible reason to believe that the unavoida egulatory scheme world-wide. lastics. You can access the UL iQTM family of datab	i. ce and, to the able impurity c pases to obtain	best of Microconcentration on a test report	chip of the at	3.45	(mg) Total	Total  Wire Bond palladium coated copper (CuPd)	100.00 % of Total Weight	1.89
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 dechnology incorporated's knowledge and belief as of the hemical substance, if any, is not below the threshold of reloiding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemiche protective "tubes" in which the specific product is shi	d via internal design control chemical substance is NOT of the date of this document, there egulatory concern for any reflammability standard for pleasis/plastics/ ipped are made from polyviron in this form concerning ect to the best of its knowle form because it has been coffrom disclosure as trade se imates of the average weight	Is, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devire is no credible reason to believe that the unavoidal egulatory scheme world-wide.  Iastics. You can access the UL iQTM family of database of the control	ce and, to the able impurity consess to obtain d to hold the pology Incorpor crochip Technafety Data Shewided by subceted significant	best of Microconcentration of a test report backing slip or ated's semicoology Incorporets provided brontract assem toxic metals of	chip of the  at the outer inductor rated cannot by raw inblers and	3.45	(mg) Total	Wire Bond palladium coated copper (CuPd)	100.00 % of Total Weight 98	1.89
irective 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 dechnology Incorporated's knowledge and belief as of the hemical substance, if any, is not below the threshold of roloiding 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 shied or and certain "reels" may be made from PVC plastic. dicrochip Technology Incorporated believes the informative evices in their original packing materials is true and corrustrate the completeness and accuracy of data in this fraterial suppliers. Supplier information is often protected aw material suppliers. Information is provided only as est hese estimates do not include trace levels of dopants, mulicrochip Technology Incorporated does not provide any roduct warranties provided by Microchip Technology Incorporated does not provide any roduct warranties provided by Microchip Technology Incorporated does not provide any roduct warranties provided by Microchip Technology Incorporated does not provide any roduct warranties provided by Microchip Technology Incorporated acknowledgement,	d via internal design control chemical substance is NOT of date of this document, there egulatory concern for any ruflammability standard for pleats/plastics/ ipped are made from polyviron in this form concerning sect to the best of its knowleform because it has been confrom disclosure as trade section and invoices.	Is, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoida egulatory scheme world-wide.  Iastics. You can access the UL iQTM family of data may be compared to the compa	ce and, to the able impurity consess to obtain d to hold the pology incorpor crochip Techniafety Data She ovided by subceted significant in finished parallel conditions of conditions of	best of Microconcentration of a test report packing slip or ated's semico lology Incorpor ets provided brontract assen toxic metals of ts.  e exclusive, lir sale. These a	chip of the  at  n the outer  nductor ated cannot by raw nblers and components.  nited re provided	3.45	(mg) Total	Total  Wire Bond palladium coated copper (CuPd)  7440-50-8	100.00 % of Total Weight 98	1.89
irective 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 dechnology Incorporated's knowledge and belief as of the hemical substance, if any, is not below the threshold of roloiding 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 shied or and certain "reels" may be made from PVC plastic. Ilicrochip Technology Incorporated believes the informative evices in their original packing materials is true and corrustarantee the completeness and accuracy of data in this fraterial suppliers. Supplier information is often protected aw material suppliers. Information is provided only as est hese estimates do not include trace levels of dopants, mulicrochip Technology Incorporated does not provide any roduct warranties provided by Microchip Technology Incorporated to the second of the second of the provided by Microchip Technology Incorporated does not provide any roduct warranties provided by Microchip Technology Incorporated to the second of the secon	d via internal design control chemical substance is NOT of the date of this document, there egulatory concern for any reflammability standard for plastics/ ipped are made from polyvir ion in this form concerning sect to the best of its knowled from disclosure as trade set imates of the average weight etals, and non-metal material warranty, express or implie orporated and its subsidiari and invoices.	Is, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devire is no credible reason to believe that the unavoidal egulatory scheme world-wide.  Iastics. You can access the UL iQTM family of databastics. You can access the UL iQTM family of databastics. You can access the UL iQTM family of databastics. You can access the UL iQTM family of databastics and belief, as of the date listed in this form. Microphiled based on the ranges provided in Material Schertes and some information may not have been protected in the parts and the average weight of anticipal als contained within silicon devices (silicon IC) in the dies are contained in Microchip's standard terms and the Declarations and shall not be liable for any dama	ce and, to the table impurity consess to obtain d to hold the pology Incorporerochip Technicately Data She evided by subcted significant le finished parieclaration. The d conditions of ges, direct or i	best of Microconcentration of a test report ated's semicoology Incorpoi tests provided is contract assentoxic metals of ts.  e exclusive, life f sale. These a indirect, conse	chip of the  at  the outer  inductor rated cannot by raw iblers and components.  inited re provided equential 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	100.00 % of Total Weight 98 2 100.00	

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AICROCHIP  Semiconductor Device T	ype: AKZE 72 V	QFN 10x10x0.9 (NU)		ation Base A	. ,		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	101.10	(mg) Total	Mold Compound	% ot Total Weight	45.83
Silica Fused	60676-86-0	Mold Compound	40.454	89.242	404,541	1	Silica Fused	60676-86-0	88.27	
Epoxy Resin	Trade Secret	Mold Compound	2.860	6.309	28,598		Epoxy Resin	Trade Secret	6.24	
Phenol Resin	Trade Secret	Mold Compound	2.379	5.247	23,786		Phenol Resin	Trade Secret	5.19	
Carbon Black	1333-86-4	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		
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		Copper		97.34	10.01
Silver	7440-22-4	Lead Frame	0.050	0.110	499		Iron		2.35	
Phosphorus	7723-14-0	Lead Frame	0.041	0.091	412		Zinc		0.13	
Silver	7440-22-4	Die Attach	0.870	1.919	8.701		Silver		0.10	
Acrylic Resin	Trade secret	Die Attach	0.096	0.212	961		Phosphorus		0.08	
Epoxy Resin	Trade secret	Die Attach	0.028	0.062	283	,		Total	100.00	
Acrylated EP-Resin	Trade secret	Die Attach	0.062	0.137	622	2.49	(mg) Total	Die Attach	% of Total Weight	1.13
Polybutadiene derivative & Coplolymer	Trade secret	Die Attach	0.073	0.162	735		Silver	7440-22-4	77.00	
Silicon	7440-21-3	Chip (Die)	2.500	5.515	25,000		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	3.600	Polybutadien	e derivative & Coplolymer	Trade secret	6.50	
1111								Trade Secret		
IIII	7.10010	TOTALS:	100.000	220.600	1,000,000	,,,,,,,,	e delivative di Copiolymer	Total		
	0.22060	TOTALS:	100.000		,,	5.52	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	2.50
s semiconductor device and its homogenous materials conctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via	0.22060 nply with EU Directive 20	TOTALS: g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/	100.000 EU (RoHS Reca		,,	5.52		Total	100.00 % of Total Weight 100	2.50
semiconductor device and its homogenous materials con tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vis themical substance is absent from the list above, the cher anology Incorporated's knowledge and belief as of the dat	0.22060 on ply with EU Directive 20 tinternal design controls internal design controls in the plant is not a substance is NOT a cof this document, then	TOTALS: g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/ s, supplier declarations, and /or analytical test da an intentional ingredient in the semiconductor de e is no credible reason to believe that the unavoir	100.000 EU (RoHS Recata. ta. vice and, to the	ast Directive)	and with EU	5.52	Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	2.50
semiconductor device and its homogenous materials conctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher hnology Incorporated's knowledge and belief as of the dat mical substance, if any, is not below the threshold of regulding compounds used by Microchip meet the UL94 V0 flam	0.22060 nply with EU Directive 20 niternal design control nical substance is NOT are of this document, then latory concern for any reanability standard for planability sta	TOTALS:  g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/ s, supplier declarations, and /or analytical test da an intentional ingredient in the semiconductor de e is no credible reason to believe that the unavoigulatory scheme world-wide.	100.000 EU (RoHS Recated tate) Take to the dable impurity of	best of Micro	and with EU ochip of the		Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3 Total Wire Bond palladium coated	100.00 % of Total Weight 100 100.00	
s semiconductor device and its homogenous materials conctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.22060 nply with EU Directive 20 ni internal design control nical substance is NOT a e of this document, then latory concern for any remability standard for plaplastics/	TOTALS: g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/ s, supplier declarations, and /or analytical test da an intentional ingredient in the semiconductor de e is no credible reason to believe that the unavoice gulatory scheme world-wide. astics. You can access the UL iQTM family of data	100.000 EU (RoHS Recate ta. vice and, to the dable impurity of	best of Microconcentration	and with EU schip of the		Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 100 100.00 % of Total Weight 98 1.75	
s semiconductor device and its homogenous materials conctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher hnology Incorporated's knowledge and belief as of the dat mical substance, if any, is not below the threshold of regul ding compounds used by Microchip meet the UL94 V0 flam ://lul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shippe	0.22060 on ply with EU Directive 20 ni internal design controlinical substance is NOT are of this document, theratory concern for any remability standard for plaplastics/ d are made from polyvin this form concerning so the best of its knowledis form because it has I from disclosure as traditimates of the average w	TOTALS:  g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/ s, supplier declarations, and /or analytical test da an intentional ingredient in the semiconductor de e is no credible reason to believe that the unavoic gulatory scheme world-wide. astics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Tech doge and belief, as of the date listed in this form. Moeen compiled based on the ranges provided in Me e secrets and some information may not have be eight of these parts and the average weight of an	100.000  TEU (RoHS Recital  ta.  vice and, to the dable impurity of the dable in the dable impurity of the dable in	best of Microconcentration  n a test repor  packing slip o  rated's semicology Incorpo  pata Sheets p  subcontract a  icant toxic me	and with EU  chip of the  t at  on the outer  onductor  orated rovided by assemblers  stals		Total (mg)  Doped Silicon  (mg) Total  Copper	Total Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8	100.00 % of Total Weight 100 100.00 % of Total Weight 98 1.75	
s semiconductor device and its homogenous materials conctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher hnology Incorporated's knowledge and belief as of the dat mical substance, if any, is not below the threshold of regulding compounds used by Microchip meet the UL94 V0 flant://ul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shippe and certain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information is idea in the incise in their original packing materials is true and correct thot guarantee the completeness and accuracy of data in the material suppliers. Supplier information is often protected raw material suppliers. Information is provided only as estaponents. These estimates do not include trace levels of devochip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated icrochip's quotations, sales order acknowledgement, and	nply with EU Directive 20 a internal design control: nical substance is NOT a e of this document, then atory concern for any re amability standard for pla plastics/ d are made from polyvin an this form concerning s o the best of its knowled his form because it has I from disclosure as trad timates of the average w upants, metals, and non- aranty, express or implied orated and its subsidiarie invoices.	TOTALS:  g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/ s, supplier declarations, and /or analytical test da an intentional ingredient in the semiconductor de e is no credible reason to believe that the unavoi- egulatory scheme world-wide. astics. You can access the UL iQTM family of data equiparties of the data listed in this form. No been compiled based on the ranges provided in No esercets and some information may not have be reight of these parts and the average weight of mental materials contained within silicon devices d, with respect to the information provided in this es are contained in Microchip's standard terms and	TEU (RoHS Recital.  Vice and, to the dable impurity of the dable included by the dable i	best of Microconcentration  n a test report  packing slip of  rated's semicrology Incorpo  Data Sheets p  subcontract a  iciant toxic me  te finished pa  the exclusive, I  of sale. These	and with EU  ochip of the  t at  on the outer  onductor  orated  rovided by  assemblers  otals  rts.  imited  are provided		Total (mg)  Doped Silicon  (mg) Total  Copper	Total Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	100.00 % of Total Weight 100 100.00 % of Total Weight 98 1.75	
s semiconductor device and its homogenous materials conctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via chemical substance is absent from the list above, the cher hnology Incorporated's knowledge and belief as of the dat mical substance, if any, is not below the threshold of regul dinig compounds used by Microchip meet the UL94 V0 flam:://ul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shippe and certain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information is ices in their original packing materials is true and correct the not guarantee the completeness and accuracy of data in the material suppliers. Supplier information is often protected raw material suppliers. Information is provided only as estimates do not include trace levels of devochip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warranties provided by Microchip Technology Incorporated does not provide any warduct warduct warduct warduct warduct ward	0.22060 on ply with EU Directive 20 to internal design contrological substance is NOT at e of this document, therefore the contrological substance of this document, therefore the concern for any remability standard for playlestics/ d are made from polyving this form concerning so the best of its knowled its form because it has a from disclosure as traditionates of the average with the control the control that is form disclosure as traditionates of the average with the control that is the control that	TOTALS:  g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/ s, supplier declarations, and /or analytical test da an intentional ingredient in the semiconductor de e is no credible reason to believe that the unavoic egulatory scheme world-wide. astics. You can access the UL iQTM family of data and chief the semiconductor of the semiconductor of egulatory scheme world-wide.  Set of the UL iQTM family of data and chief the semiconductor of the semiconductor	ta.  vice and, to the dable impurity of abases to obtain the control of the contr	best of Microconcentration n a test report packing slip of rated's semicology Incorporata Sheets p subcontract a icant toxic me the finished pa the exclusive, I of sale. These indirect, considered,	and with EU  chip of the  t at  on the outer  onductor  orated rovided by assemblers stals rts.  imited are provided sequential or	0.60	Total (mg)  Doped Silicon  (mg) Total  Copper  Palladium	Total Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3 Total	100.00 % of Total Weight 100 100.00 % of Total Weight 98 1.75 100.00 % of Total Weight	0.27

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MICROCHIP	T OVER 40	VOEN		nination Bas Copper Alloy				ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: QXBE 12 (Lead		W T-1-1							es
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	6.10	(mg) Total	Mold Compound	% ot Total Weight	60.43
Silica, fused	60676-86-0	Mold Compound	54.387	5.493	543.870		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.931	0.296	29.309		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.931	0.296	29,309	1	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		•	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	7440-21-3	Lead Frame	0.161	0.016	1,608		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.036	0.004	357		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.597	0.060	5,965	_	Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.904	0.091	9,040		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.226	0.023	2,260		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.230	0.124	12,300			Total	100.00	
Gold	7440-57-5	Wire Bond	0.370	0.037	3,700	0.11	(mg) Total	Die Attach	% of Total Weight	1.13
Tin	7440-31-5 PI	lating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100 <b>100.000</b>	0.111 <b>10.100</b>	11,000 1.000.000		Silver	7440-22-4 Trade secret	80.00 20.00	
		TOTALS:	100.000	10.100	1,000,000		Epoxy Resin	Total	20.00 <b>100.00</b>	
semiconductor device and its homogenous materials co	omply with EU Directive 2002	2/05/EC (PoHS Directive) EII Directive 2011/6								
		233/LO (NOTIO Directive), LO Directive 2011/	55/EU (RoHS	Recast Direc	tive) and with	0.12	(mg) Total	Chip (Die)	% of Total Weight	1.23
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	e).	233/20 (Notice Directive), 20 Directive 2011/0	55/EU (RoHS	Recast Direc	tive) and with	0.12	(mg) Total	Chip (Die)	% of Total Weight	1.23
apliance with the above EU Directives has been verified v	ria internal design controls, s	supplier declarations, and /or analytical test	data.		ŕ	0.12 Doped GaAs	(mg) Total  Gallium arsenide (GaAs)	Chip (Die) 1303-00-0 Total	% of Total Weight 100.00 100.00	1.23
pliance with the above EU Directives has been verified v chemical substance is absent from the list above, the che nnology Incorporated's knowledge and belief as of the da nical substance, if any, is not below the threshold of reg	via internal design controls, semical substance is NOT an late of this document, there is ulatory concern for any regu	supplier declarations, and /or analytical test intentional ingredient in the semiconductor is no credible reason to believe that the unavallatory scheme world-wide.	data. device and, t oidable impu	to the best of urity concentr	Microchip ation of the	Doped GaAs	Gallium arsenide (GaAs)	1303-00-0 Total	100.00	
upliance with the above EU Directives has been verified verbemical substance is absent from the list above, the che nology Incorporated's knowledge and belief as of the denical substance, if any, is not below the threshold of regular compounds used by Microchip meet the UL94 V0 flat/ul.com/global/eng/pages/offerings/industries/chemicals	internal design controls, semical substance is NOT an semical substance is NOT and at eof this document, there is ulatory concern for any regular mability standard for plast s/plastics/	supplier declarations, and /or analytical test intentional ingredient in the semiconductor of societal to be semiconductor of societal the unavallatory scheme world-wide.	data. device and, t oidable impu atabases to	to the best of urity concentr obtain a test r	Microchip ation of the eport at	-		1303-00-0	100.00	0.37
npliance with the above EU Directives has been verified verbemical substance is absent from the list above, the che honology Incorporated's knowledge and belief as of the dramical substance, if any, is not below the threshold of regular compounds used by Microchip meet the UL94 V0 flate/lul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipp	via internal design controls, s emical substance is NOT an a ate of this document, there is ulatory concern for any regu immability standard for plast s/plastics/ ed are made from polyvinyl	supplier declarations, and /or analytical test intentional ingredient in the semiconductor of societal to be semiconductor of societal the unavallatory scheme world-wide.	data. device and, t oidable impu atabases to	to the best of urity concentr obtain a test r	Microchip ation of the eport at	Doped GaAs	Gallium arsenide (GaAs)	1303-00-0  Total  Wire Bond  7440-57-5	100.00 100.00 % of Total Weight	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive mpliance with the above EU Directives has been verified vehicles (ELV) Directives mpliance with the above EU Directives has been verified vehicles of the description of the chology Incorporated's knowledge and belief as of the desmical substance, if any, is not below the threshold of regiding compounds used by Microchip meet the UL94 V0 flaps://ul.com/global/eng/pages/offerings/industries/chemicals eprotective "tubes" in which the specific product is shipp ter box and certain "reels" may be made from PVC plastic prochip Technology Incorporated believes the information vices in their original packing materials is true and correction guarantee the completeness and accuracy of data in w material suppliers. Supplier information is provided only as emponents. These estimates do not include trace levels of	via internal design controls, so it internal design controls, so it internal design controls, so it in this document, there is ulatory concern for any regular manability standard for plast s/plastics/ or it in this form concerning subtate to the best of its knowledge this form because it has bed from disclosure as trade s stimates of the average weight in the standard of the standard in the stan	supplier declarations, and /or analytical test intentional ingredient in the semiconductor is no credible reason to believe that the unavalatory scheme world-wide.  sics. You can access the UL iQTM family of dichloride (PVC) plastic. "Window envelopes" estances restricted by RoHS in Microchip Test and belief, as of the date listed in this form. en compiled based on the ranges provided in secrets and some information may not have I ght of these parts and the average weight of	data. device and, to didable imputatabases to used to hold the imputate in Material Sapeen provide anticipated s	to the best of urity concentr obtain a test of the packing corporated's see Technology In fety Data She at by subconti	Microchip ation of the eport at slip on the emiconductor corporated ets provided by ract assemblers ic metals	Doped GaAs	Gallium arsenide (GaAs)	1303-00-0 Total Wire Bond	100.00 100.00 % of Total Weight	
mpliance with the above EU Directives has been verified vertical substance is absent from the list above, the checknology Incorporated's knowledge and belief as of the desimical substance, if any, is not below the threshold of regulding compounds used by Microchip meet the UL94 V0 flap://ul.com/global/eng/pages/offerings/industries/chemicals to protective "tubes" in which the specific product is shippeder box and certain "reels" may be made from PVC plastic crochip Technology Incorporated believes the information vices in their original packing materials is true and correct in the protective corporated believes the information with the suppliers. Supplier information is often protected raw material suppliers. Information is provided only as e	ria internal design controls, semical substance is NOT an interest of this document, there is ulatory concern for any regular mability standard for plast s/plastics/ sed are made from polyvinyl in this form concerning subtate to the best of its knowledge this form because it has been deform disclosure as trade stimates of the average weig dopants, metals, and non-memorranty, express or implied, we porated and its subsidiaries is	supplier declarations, and /or analytical test intentional ingredient in the semiconductor is no credible reason to believe that the unavalatory scheme world-wide.  sics. You can access the UL iQTM family of dichloride (PVC) plastic. "Window envelopes" estances restricted by RoHS in Microchip Tect and belief, as of the date listed in this formation compiled based on the ranges provided in the plant of these parts and the average weight of these parts and the average weight of etal materials contained within silicon device with respect to the information provided in the silicon provided in the semicondition of t	data.  device and, to didable imputatabases to used to hold the imputate in Material Sapeen provide anticipated ses (silicon IC) is declaration is declaration.	to the best of urity concentr obtain a test of the packing corporated's seed by subconting the finished on. The exclusion.	Microchip ation of the eport at slip on the emiconductor corporated ets provided by ract assemblers ic metals et parts.	Doped GaAs	Gallium arsenide (GaAs)	1303-00-0  Total  Wire Bond  7440-57-5	100.00 100.00 % of Total Weight	
mpliance with the above EU Directives has been verified verbenical substance is absent from the list above, the checknology Incorporated's knowledge and belief as of the determination of the common	ria internal design controls, semical substance is NOT an late of this document, there is ulatory concern for any regular mability standard for plast s/plastics/ led are made from polyvinyl version in this form concerning subset this form because it has been defrom disclosure as trade set stimates of the average weig dopants, metals, and non-metarranty, express or implied, version provided and its subsidiaries is manges to Material Content D the users' reliance on the in	supplier declarations, and /or analytical test intentional ingredient in the semiconductor of some credible reason to believe that the unavallatory scheme world-wide.  Lics. You can access the UL iQTM family of dichloride (PVC) plastic. "Window envelopes" astances restricted by RoHS in Microchip Test and belief, as of the date listed in this former compiled based on the ranges provided in the creates and some information may not have light of these parts and the average weight of the attention to the contained within silicon device with respect to the information provided in the are contained in Microchip's standard terms declarations and shall not be liable for any declarations and shall not be liable for any declarations.	data.  device and, to oidable imputation atabases to used to hold chnology inc.  Microchip To Material Sapeen provide anticipated sis (silicon IC) and condition and condition anages, dire	to the best of urity concentroption a test red the packing corporated's secondary line to the packing by the pata Shed by subcont significant toxol in the finisher on. The exclusions of sale. The corporation of the packing in the finisher on the packing of the	Microchip ation of the eport at slip on the emiconductor corporated ets provided by ract assemblers ic metals et personal experience	Doped GaAs  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	100.00 100.00 % of Total Weight 100.00	0.37
inpliance with the above EU Directives has been verified verified in the content of the content	ria internal design controls, semical substance is NOT an late of this document, there is ulatory concern for any regular mability standard for plast s/plastics/ led are made from polyvinyl version in this form concerning subset this form because it has been defrom disclosure as trade set stimates of the average weig dopants, metals, and non-metarranty, express or implied, version provided and its subsidiaries is manges to Material Content D the users' reliance on the in	supplier declarations, and /or analytical test intentional ingredient in the semiconductor of some credible reason to believe that the unavallatory scheme world-wide.  Lics. You can access the UL iQTM family of dichloride (PVC) plastic. "Window envelopes" astances restricted by RoHS in Microchip Test and belief, as of the date listed in this former compiled based on the ranges provided in the creates and some information may not have light of these parts and the average weight of the attention to the contained within silicon device with respect to the information provided in the are contained in Microchip's standard terms declarations and shall not be liable for any declarations and shall not be liable for any declarations.	data.  device and, to oidable imputation atabases to used to hold chnology Inc.  Microchip To Material Sapeen provide anticipated sis (silicon IC) and condition and condition anages, dire	to the best of urity concentroption a test red the packing corporated's secondary line to the packing by the pata Shed by subcont significant toxol in the finisher on. The exclusions of sale. The corporation of the packing in the finisher on the packing of the	Microchip ation of the eport at slip on the emiconductor corporated ets provided by ract assemblers ic metals et parts. sive, limited hese are consequential	Doped GaAs  0.04	Gallium arsenide (GaAs)  (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	100.00 100.00 % of Total Weight 100.00 100.00 % of Total Weight	0.37

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Basics Substance   CLS Number   Sub-Component   Weight   Might   Might			ination Base opper Alloy (	•		•	nogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Bails Substance Siles, lused Si									e3
Salida, Lused 607-8-50-0 Molt Compound 49-14 1-14 403-47 7-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 403-47 1-14 1-14 403-47 1-14 1-14 403-47 1-14 1-14 403-47 1-14 1-14 403-47 1-14 1-14 403-47 1-14 1-14 403-47 1-14 1-14 403-47 1-14 1-14 403-47 1-14 1-14 403-47 1-14 1-14 1-14 1-14 1-14 1-14 1-14 1					7.94	(mg) Total	Mold Compound	% ot Total Weight	44.83
Epory Resin Trade Secret Mold Compound 2,174 0,385 21,743 Epory Resin Trade Secret 4,85 Carbon Black 1333-86-4 Mold Compound 0,134 0,235 21,743 Carbon Black 1333-86-4 Mold Compound 0,134 0,024 1,345 Carbon Black 1333-86-4 Mold Compound 0,134 0,024 1,034 Carbon Black 1333-86-4 Mold Comp			mg/part		7.54	(ilig) i otal	Word Compound	78 Ot 1 Otal Weight	44.00
Phenolic Resin   Trade Secret   Mold Compound   2,174   0,385   21,743   Copper   7,440,50-8   Lead Frame   4,544   8,070   455,442   Notice   7,440,50-8   Lead Frame   0,048   0,058   0,058   478   Notice   7,440,50-8   Lead Frame   0,048   0,058   0,058   478   Notice   7,440,50-8   Lead Frame   0,048   0,058   478   Notice   7,440,50-8   Notice   1,440,50-8   1,440,50-8   Notice   7,440,50-8   Notice   1,440,50-8   1,440,50-8   Notice   7,440,50-8   Notice   1,440,50-8								90.00	
Carbon Black   1333-88-4   Mold Compound   0.134   0.024   1.346   COpper   7440-90-8   Lead Frame   4.54-64   8.070   456-542   Silkion   7440-92-0   Lead Frame   1.215   0.216   12,146   8.47   (mg) Total   Lead Frame   1.215   0.216   12,146								4.85	
Copper   7440-50-8   Lead Frame   4.5.544   8.070   455.442   Nickel   7440-20-3   Lead Frame   1.215   0.215   1.2148   8.47   (mg) Total   Lead Frame   0.2145   0.388   2.152   Magnesium   7439-55-4   Lead Frame   0.215   0.308   2.152   Nickel   7440-50-8   95.2   Nickel   7440-50-8   95.2   Nickel   7440-50-8   95.2   Nickel   7440-50-8									
Nickel 7440-02-0 Lead Frame 1.215 0.215 12.146 8.47 (mg)Total Lead Frame 5.215 0.038 2.152 Copper 7.405-05-8 95.2 Magnesium 7.439-95-4 Lead Frame 0.048 0.008 478 Nickel 7.400-02-0 2.55-8 Nickel 7.						Carbon Black			
Silicon 7440;21:3 Leaf Frame 0,215 0,038 2,152								100.00	
Magnesium 17439-954   Lead Frame 0.048 0.008 478   Silver 17440-224   Load Frame 0.798 0.141 7.981   Silver 17440-224   Load Frame 0.798 0.141 7.981   Silver 17440-224   Die Attach 0.728 0.129 7.280   Silver 17440-224   Die Attach 0.152 0.032 1.820   Silver 17440-224   Die Attach 0.152 0.032 1.820   Silver 17440-224   Die Attach 0.152 0.032 1.820   Silver 17440-224   Silver 17440-234 1.67   Silver 17440-234 1.6				, ,	8.47	(mg) Total		% of Total Weight	47.82
Silver   7440-22-4   Load Frame   0.798   0.141   7.981   Migneeum   7430-92-5   0.140   0.781   Migneeum   7430-92-5   0.140   0.182   0.192   1.200   Silver   7440-22-4   1.67   Silver   7440-22-4   Silver   7440-22-4   Silver   7440-22-4   Silver   7440-23-5   Silver   Silver   Silver   Silver   Silver   Silver   Silver   Silv								95.24	
Silver 7440-22-4 Die Attach 0.728 7.280  Epoxy Resin Trade secret Die Attach 0.122 0.323 1.820  Gaillum arsenide (GaAs) 1303-00-0 Chip (Die) 2.490 0.441 24,900  Total Die Attach 0.1550 0.550 0.99 5.560 0.16 (mg) Total Die Attach 9.4740-57-5 0.000  Total 1.00000 1.77-20 1.00000  Total Mass  Total 1.00000 1.77-20 1.00000  O.0177 g Total Mass  Total 1.00000 1.000000  O.0177 g Total Mass  Total 1.00000 1.000000  O.0177 g Total Mass  Total 1.00000 1.000000  O.0177 g Total Mass  Total 1.000000 1.000000  O.0177 g Total Mass  Total 1.000000 1.000000000000000000000000000									
Epoxy Resin Trade secret Die Attach 0.182 0.032 1,820 Silver 7440-22-4 167 (and the properties of the									
Gallum arsenide (GalAs) Doped Gold Tyt40-57-5 Tin 7440-31-5 Tin 7440-31-5 Tin 7440-31-5 Tin 7440-31-5 Tin 7440-31-5 Tin Tytal									
Doped Gold 7440-57-5 Wire Bord 15 Wire Bord						Silver			
O.0177 g Total Mass  O.017 g Total Mass  O.027 g Total Mass  O.028 galium arisenide  O.028 Galium arisenide  O.029 Galium ariseni			4					100.00	
Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (Rod-Of-Life Vehicles (ELV) Directive).  Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (Rod-Of-Life Vehicles (ELV) Directive).  Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (Rod-Of-Life Vehicles (ELV) Directive).  Semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (Rod-Of-Life Vehicles (ELV) Directive).  Semiconductor device and its homogenous materials comply with EU Directive 2011/65/EU (RodHS Recast Directive) and with EU  Out (mg) Total  Chip (Die)  Out (mg) Total  Oped GaAs  Gallium arsenide  1303-00-0  100  Doped GaAs  Gallium arsenide  1303-00-0  100  Total  Out (mg) Total  Wire Bond  Wire Bond  Wire Bond  Wire Bond  Wire Bond  7440-57-5  100.0  Only Total  Outper Good on the outer and certain "reels" may be made from PVC plastic.  Ochip Technology Incorporated believes the information in this form because it has been compiled based on the ranges provided by reaver and active in registral suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components.  Ochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this formation is often protected from disclosure as trade secrets and some information devices (silicon IC) in the finished parts.  Ochip Tech					0.16			% of Total Weight	0.91
O.0177 g Total Mass  O.0177 g Total Only incorporated Standards on the date data.  O.0187 G Total Mass  O.0187 G Total Mass  O.0187 G Total Mass  O.0187 G Total Mass  O.0197 T T								80.00	
semiconductor device and its homogenous materials comply with EU Directive 2002/55/EC (RoHS Directive). EU Directive 2002/55/EC (RoHS Directive). Directive).  10.44 (mg) Total Chip (Die) % of Total Chip (Die) (mg) Total Chip (mg) To		OTALS: 100.000	17.720	1,000,000		Epoxy Resin		20.00	
pilance 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 mology 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 nical substance, if any, 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 //ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic.  Doped Gold  7440-57-5  100.0  Total  Doped Gold  7440-57-5  100.0  Total  Doped Gold  7440-57-5  100.0  Total  Plating on external leads (pins) - Matter IX after the search provided in this form concerning substances are contained within silicon devices (silicon IC) in the finished parts. estimated do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. estimated provided by Microchip Technology Incorporated does not provided any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product antices provided by Microchip 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 by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product (mg) Total  Plating o	0.0177 g Total Mass						Total	100.00	=
local purple could by Microchip Technology Incorporated believes the information in this form concerning substance is not seimates do not include trace levels of dopants, metalis, and non-metal materials contained with respect to the information provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided by Microchip Technology Incorporated does not provided any warranty, express or implied, with respect to the information provided in Microchip's standard terms and conditions of sale. These are provided in chip's quotations, sales order acknowledgement, and invoices.    Doped GaAs   Gallium arsenide   1303-00-0   100		65/EU (RoHS Recast	Directive) and	d with EU	0.44	(mg) Total	Chip (Die)	% of Total Weight	2.49
nemical 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 hology 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 ical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  In grompounds 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 Vul.com/global/eng/pages/offerings/industries/chemicals/plastics/  In the certain "reels" 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 and certain "reels" may be made from PVC plastic.  Chip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated cannot intent the completeness and accuracy of data in this form because it has been completed based on the ranges provided in Material Safety Data Sheets provided by raw it als suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and atterial suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. estimates 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 in the provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in the fi	10.000 (22.1) 2.1.001.10).					( 3)			2
ul.com/global/eng/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 and certain "reels" may be made from PVC plastic.  Chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor so 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 nate the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and aterial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and aterial suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. estimates 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 notes provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in the outer of the ou			est of Microch	in	Doped GaAs	·	1303-00-0	100	
and certain "reels" may be made from PVC plastic.    Doped Gold   7440-57-5   100.0	m the list above, the chemical substance is NOT an intentional ingredient in the semiconductoge and belief as of the date of this document, there is no credible reason to believe that the un	device and, to the b			Doped GaAs	·	1303-00-0		
ochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor ces 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 antee the 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 perial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and material suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. See estimates do not include 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 product anties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in ochip's of Total placed (pins) - Matte Tin / annealed at 150°C for 1 hour	m the list above, the chemical substance is NOT an intentional ingredient in the semiconductor ge and belief as of the date of this document, there is no credible reason to believe that the un low the threshold of regulatory concern for any regulatory scheme world-wide. hip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of	device and, to the be voidable impurity co	ncentration of	the	·	Gallium arsenide	1303-00-0 Total		0.56
ces 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 rantee the 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 reiral suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. see estimates do not include 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 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 continuous accordance of the continuous data of the continuous	m the list above, the chemical substance is NOT an intentional ingredient in the semiconductor go and belief as of the date of this document, there is no credible reason to believe that the unlow the threshold of regulatory concern for any regulatory scheme world-wide. This preet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of the original schemicals/plastics/specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes	device and, to the booting of the bo	ncentration of a test report at	the	·	Gallium arsenide (mg) Total	1303-00-0  Total  Wire Bond	100.00	
ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in rochip's quotations, sales order acknowledgement, and invoices.    Leads (pins) - Matte Tin / annealed at 150°C for 1 hour	m the list above, the chemical substance is NOT an intentional ingredient in the semiconductor and belief as of the date of this document, there is no credible reason to believe that the unlow the threshold of regulatory concern for any regulatory scheme world-wide. hip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of ngs/industries/chemicals/plastics/ specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes of from PVC plastic."	device and, to the be voidable impurity con databases to obtain a ' used to hold the pa	ncentration of a test report at cking slip on t	the t	·	Gallium arsenide (mg) Total	1303-00-0  Total  Wire Bond  7440-57-5	100.00 % of Total Weight	
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	m the list above, the chemical substance is NOT an intentional ingredient in the semiconductor grand belief as of the date of this document, there is no credible reason to believe that the unlow the threshold of regulatory concern for any regulatory scheme world-wide. This present the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of ngs/industries/chemicals/plastics/ specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes from PVC plastic. believes the information in this form concerning substances restricted by RoHS in Microchip Terials is true and correct to the best of its knowledge and belief, as of the date listed in this for turacy of data in this form because it has been compiled based on the ranges provided in Microchip To in its often protected from disclosure as trade secrets and some information may not have be a provided only as estimates of the average weight of these parts and the average weight of and the secrets with the secret in the secret is not the secret in the secret is not some information may not have be a provided only as estimates of the average weight of these parts and the average weight of and the secret is not secret in the secret is not the secret in the secret in the secret information may not have be a provided only as estimates of the average weight of these parts and the average weight of and the secret in the secret	device and, to the be voidable impurity con databases to obtain a ' used to hold the pa chnology Incorporat i. Microchip Technolial Safety Data Sheet in provided by subco- cipated significant to	a test report at cking slip on t ed's semicone ogy Incorpora is provided by triract assemb oxic metals co	the outer ductor ted cannot raw olers and	·	Gallium arsenide (mg) Total	1303-00-0  Total  Wire Bond  7440-57-5	100.00 % of Total Weight	
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  Tin 7440-31-5 100.0  Tin 7440-31-5 100.0	m the list above, the chemical substance is NOT an intentional ingredient in the semiconductor and belief as of the date of this document, there is no credible reason to believe that the unlow the threshold of regulatory concern for any regulatory scheme world-wide. This meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of ngs/industries/chemicals/plastics/ specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes from PVC plastic. believes the information in this form concerning substances restricted by RoHS in Microchip Terials is true and correct to the best of its knowledge and belief, as of the date listed in this for turacy of data in this form because it has been compiled based on the ranges provided in Mate in its in protected from disclosure as trade secrets and some information may not have be a provided only as estimates of the average weight of these parts and the average weight of an elevels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC does not provide any warranty, express or implied, with respect to the information provided in chnology Incorporated and its subsidiaries are contained in Microchip's standard terms and c	device and, to the be voidable impurity con databases to obtain a used to hold the pa chnology Incorporat h. Microchip Technolial Safety Data Sheet n provided by subco- cipated significant to in the finished parts his declaration. The	a test report at cking slip on the ed's semicone ogy Incorpora is provided by intract assemb oxic metals co	the outer ductor ted cannot rraw olers and mponents.	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	100.00 % of Total Weight	
Total	m the list above, the chemical substance is NOT an intentional ingredient in the semiconductor and belief as of the date of this document, there is no credible reason to believe that the unlow the threshold of regulatory concern for any regulatory scheme world-wide. hip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of ggs/industries/chemicals/plastics/ specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes of from PVC plastic.  believes the information in this form concerning substances restricted by RoHS in Microchip To erials is true and correct to the best of its knowledge and belief, as of the date listed in this for uracy of data in this form because it has been compiled based on the ranges provided in Mate ion is often protected from disclosure as trade secrets and some information may not have be a provided only as estimates of the average weight of these parts and the average weight of an elevels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC does not provide any warranty, express or implied, with respect to the information provided in chnology Incorporated and its subsidiaries are contained in Microchip's standard terms and cucknowledgement, and invoices.  by users of updates or changes to Material Content Declarations and shall not be liable for any parties as a result of the users' reliance on the information in Material Content Declarations (needs).	device and, to the be voidable impurity con databases to obtain a used to hold the pa chnology Incorporat Microchip Technol all Safety Data Sheet in provided by subco- cipated significant to in the finished parts this declaration. The inditions of sale. The	a test report at cking slip on t ed's semicone ogy Incorpora ts provided by ntract assemb oxic metals co exclusive, limi se are provide	the outer ductor ted cannot raw elers and imponents. ted product d in	0.10	Gallium arsenide  (mg) Total  Doped Gold  (mg) Total	Vire 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	0.56

QXCE 16 XQFN 10:23 AM : 5/6/2014

CROCHIP Semiconductor Device	Type: QCF 16 (Lead)	WOEN 24240 75mm, (20)		nation Base A	•		•	ogeneous Materials: .g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e4
Semiconductor Device	Type. QCF TO (Lead)	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	10.05	(mg) Total	Mold Compound	% ot Total Weight	45.91
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	Trade Secret	Mold Compound	3.994	0.875	39,942		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.755	0.603	27,546		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.138	0.030	1,377		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	48.494	10.620	484,943		-	Total		
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		Copper	7440-50-8	97.30	
Zinc (Metal)	7440-44-0	Lead Frame	0.075	0.016	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			Total		
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		Silver	7440-22-4	78	
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	7440-05-03	Plating on external leads (pins)	0.014	0.003	140	Heter	ocyclic organic compound	Trade Secret	2	
Gold	7440-57-5	Plating on external leads (pins)	0.001	0.000	14			Total	100.00	
	•	тот	ALS: 100.000	21.900	1,000,000	0.34	Total (mg)	Chip (Die)	% of Total Weight	1.55
miconductor device and its homogenous materials		otal Mass		21.900	, ,	0.34	Total (mg) Doped GaAs		% of Total Weight 100 100.00	1.55
emiconductor device and its homogenous materials ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive iance with the above EU Directives has been verifie	comply with EU Directive 2002 ).	otal Mass 2/95/EC (RoHS Directive), EU Directive 2011/6	5/EU (RoHS Recast D	21.900	, ,	0.34		Chip (Die) 1300-00-00	100	0.46
emiconductor device and its homogenous materials ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive innce with the above EU Directives has been verified emical substance is absent from the list above, the porated's knowledge and belief as of the date of this	comply with EU Directive 2003 ). d via internal design controls, chemical substance is NOT an document, there is no credible	otal Mass 2/95/EC (RoHS Directive), EU Directive 2011/6 supplier declarations, and /or analytical test of intentional ingredient in the semiconductor of ereason to believe that the unavoidable impu	5/EU (RoHS Recast Data.	21.900 Directive) and v	with EU		Doped GaAs	Chip (Die) 1300-00-00 Total	100.00	
miconductor device and its homogenous materials ve 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 prated's knowledge and belief as of the date of this not below the threshold of regulatory concern for a grompounds used by Microchip meet the UL94 V0	comply with EU Directive 2003 ). d via internal design controls, chemical substance is NOT an document, there is no credible any regulatory scheme world-w flammability standard for plas	otal Mass 2/95/EC (RoHS Directive), EU Directive 2011/6 supplier declarations, and /or analytical test of intentional ingredient in the semiconductor of reason to believe that the unavoidable impuride.	5/EU (RoHS Recast Data.  evice and, to the besity concentration of	21.900 Directive) and vertical and vertical states of Microchips the chemical states of the	with EU		Doped GaAs  (mg) Total	Chip (Die) 1300-00-00 Total Wire Bond	100 100.00 % of Total Weight	
miconductor device and its homogenous materials 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 rated's knowledge and belief as of the date of this not below the threshold of regulatory concern for a grompounds used by Microchip meet the UL94 Vol.com/global/eng/pages/offerings/industries/chemicatective "tubes" in which the specific product is should be above the control of the	comply with EU Directive 200;  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/	otal Mass 2/95/EC (RoHS Directive), EU Directive 2011/6 supplier declarations, and /or analytical test of intentional ingredient in the semiconductor of reason to believe that the unavoidable impuride. tics. You can access the UL iQTM family of da	ata.  evice and, to the besity concentration of tabases to obtain a t	21.900  Directive) and vertical states the chemical states the che	with EU Technology substance, if		Doped GaAs  (mg) Total	Chip (Die) 1300-00-00  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
emiconductor device and its homogenous materials ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive ance with the above EU Directives has been verified ance with the above EU Directives has been verified and belief as of the date of this not below the threshold of regulatory concern for a group compounds used by Microchip meet the UL94 Vol.com/global/eng/pages/offerings/industries/chemicotective "tubes" in which the specific product is shortain "reels" may be made from PVC plastic. This process is a simple teness and accuracy of data in this form because information is often protected from disclosure as ation is provided only as estimates of the average value.	comply with EU Directive 2002).  d via internal design controls, chemical substance is NOT an document, there is no credible any regulatory scheme world-w flammability standard for plastals/plastics/ ipped are made from polyvinyl on in this form concerning sute best of its knowledge and be see it has been compiled based trade secrets and some inforreight of these parts and the average secrets and some inforreight of these parts and the averages.	otal Mass 2/95/EC (RoHS Directive), EU Directive 2011/6 supplier declarations, and /or analytical test of intentional ingredient in the semiconductor of erason to believe that the unavoidable impuride.  tics. You can access the UL iQTM family of datchloride (PVC) plastic. "Window envelopes" obstances restricted by RoHS in Microchip Teclief, as of the date listed in this form. Microchip on the ranges provided in Material Safety Denation may not have been provided by subcoverage weight of anticipated significant toxic	ata.  evice and, to the besity concentration of tabases to obtain a transfer of tabases to hold the packets prechnology Incorporated prechnology Incorporated basees provided basemblers and tract assemblers and tabases.	21.900  Directive) and water a factor of Microchip the chemical sets a report at the single sets and the single sets are ported as a factor of the single sets and the single sets are material of a factor of the single sets and the single sets are single sets are single sets and the single sets are single sets and the single sets are single sets and the single sets are single sets are single sets and the single sets are single sets and the single sets are single sets and the single sets are single sets are single sets and the single sets are single sets and the single sets are single sets are single sets are single sets and the single sets are single sets are single sets are single sets and the single sets are sin	with EU Technology substance, if e outer box actor devices t guarantee I suppliers.	0.10	Opped GaAs  (mg) Total  Doped Gold	Chip (Die) 1300-00-00 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100	0.46
emiconductor device and its homogenous materials ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	comply with EU Directive 2002.  d via internal design controls, chemical substance is NOT an document, there is no credible may regulatory scheme world-w flammability standard for plastals/plastics/ ipped are made from polyvinyl on in this form concerning subtle best of its knowledge and be use it has been compiled basee trade secrets and some informeight of these parts and the auterials contained within silicon warranty, express or implied, and its subsidiaries are controls.	otal Mass 2/95/EC (RoHS Directive), EU Directive 2011/6 supplier declarations, and /or analytical test of intentional ingredient in the semiconductor of the reason to believe that the unavoidable impuride.  tics. You can access the UL iQTM family of declaration of the chloride (PVC) plastic. "Window envelopes" of the date listed in this form. Microchip Teclief, as of the date listed in this form. Microchip on the ranges provided in Material Safety Danation may not have been provided by subcoverage weight of anticipated significant toxic devices (silicon IC) in the finished parts.	ata.  evice and, to the besity concentration of tabases to obtain a tabases to hold the packanology Incorporated p Technology Incorporated a Sheets provided butract assemblers an metals components.	21.900  Directive) and water in the chemical states and the chemical states are the chemical states are the chemical states are the chemical states are the chemical are material. These estimates are the chemical chemical chemical are chemical chemical are chemical chemical chemical are chemical chemical chemical are chemical	with EU  Technology substance, if  e outer box actor devices t guarantee I suppliers. I suppliers. I suppliers devices do not d product	0.10	Doped GaAs  (mg) Total  Doped Gold  (mg) Total	Chip (Die) 1300-00-00  Total  Wire Bond 7440-57-5  Total  Plating on external leads (pins)	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.46
emiconductor device and its homogenous materials ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive ance with the above EU Directives has been verifies mical substance is absent from the list above, the prated's knowledge and belief as of the date of this not below the threshold of regulatory concern for a grompounds used by Microchip meet the UL94 Vol.com/global/eng/pages/offerings/industries/chemicotective "tubes" in which the specific product is shottain "reels" may be made from PVC plastic.  Thip Technology Incorporated believes the informat original packing materials is true and correct to the pleteness and accuracy of data in this form because information is often protected from disclosure as attion is provided only as estimates of the average vertace levels of dopants, metals, and non-metal mathip Technology Incorporated does not provide any ties provided by Microchip Technology Incorporated to the provided by M	comply with EU Directive 2002.  d via internal design controls, chemical substance is NOT an document, there is no credible may regulatory scheme world-w flammability standard for plastals/plastics/ ipped are made from polyvinyl in the best of its knowledge and be use it has been compiled based trade secrets and some inforreight of these parts and the averals contained within silicon warranty, express or implied, and its subsidiaries are contided invoices.  changes to Material Content If the users' reliance on the informatical substance on the informatical substance.	otal Mass 2/95/EC (RoHS Directive), EU Directive 2011/6 supplier declarations, and /or analytical test of intentional ingredient in the semiconductor of erason to believe that the unavoidable impuride.  tics. You can access the UL iQTM family of declarations access the UL iQTM family of declarations are setticted by RoHS in Microchip Teclief, as of the date listed in this form. Microchip on the ranges provided in Material Safety Denation may not have been provided by subcoverage weight of anticipated significant toxic devices (silicon IC) in the finished parts.  with respect to the information provided in this ained in Microchip's standard terms and condectarations and shall not be liable for any data.	ata.  evice and, to the besity concentration of tabases to obtain a tabases to obtain a tabases to hold the packnology Incorporated p Technology Incorporate Sheets provided batract assemblers an metals components.  s declaration. The exittions of sale. These	21.900  prirective) and was a construction of Microchip the chemical sest report at the characteristics of the cha	with EU  Technology substance, if  e outer box actor devices t guarantee I suppliers. I suppliers are do not deviced for the control of the c	0.10	Doped GaAs  (mg) Total  Doped Gold  (mg) Total	Chip (Die) 1300-00-00 Total Wire Bond 7440-57-5 Total  Plating on external leads (pins)	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.46

QCF 16 WQFN 10:23 AM : 5/6/2014

MICROCHIP  Semiconductor Device Typ	e: QDE 24 (Lea	id) <b>WQFN</b> 4x4x0.75 mm (QW)		nination Base Copper Alloy				geneous Materials: ,. pc boards, displays	)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Lotal Weight	mg/part	ppm	17.88	(mg) Total	Mold Compound	% ot Total Weight	45.6
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	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	47.559	18.643	475,586			Total		
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 Phosphorous	7440-66-6 7723-14-0	Lead Frame Lead Frame	0.062 0.041	0.024	622 411		Iron Silver	7439-89-6 7440-22-4	2.35 1.91	
Silver	7440-22-4	Die Attach	0.858	0.336	8.580		Zinc	7440-22-4	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		1 Hoophorodo	Total		
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	0.10	Silver	7440-22-4	78 78	· · · · · · · · · · · · · · · · · · ·
Doped Gold	7440-57-5	Wire Bond	0.380	0.149	3,800		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 F	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	Het	terocyclic organic compound	Trade Secret	2	
	0.0202 ~	Tatal Mass						Total	100.00	_
		J Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (R	oHS Recast I	Directive) and	l with EU	0.34	(mg) Total	Chip (Die)	% of Total Weight	0.87
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance with the above EU Directives has been verified via intended to the chemical substance is absent from the list above, the chemica	with EU Directive 200 ernal design controls, I substance is NOT an	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device ar	nd, to the be	st of Microchi	p Technology	0.34	(mg) Total  Gallium arsenide (GaAs)	1	% of Total Weight	0.87
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  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, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flamma	with EU Directive 200 ernal design controls, I substance is NOT an nt, there is no credible latory scheme world-w bility standard for plas	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device as e reason to believe that the unavoidable impurity condition.	nd, to the be centration of	st of Microchi the chemical	p Technology substance, if	0.34	,	<b>Chip (Die)</b> 1303-00-0	% of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via into a chemical substance is absent from the list above, the chemical corporated's knowledge and belief as of the date of this docume y, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammal p://ul.com/global/eng/pages/offerings/industries/chemicals/plase protective "tubes" in which the specific product is shipped and	with EU Directive 200 ernal design controls, I substance is NOT an nt, there is no credible latory scheme world-w billity standard for plas tics/	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device ar reason to believe that the unavoidable impurity condide. tics. You can access the UL iQTM family of database	nd, to the be centration of s to obtain a	st of Microchi the chemical test report at	p Technology substance, if		Gallium arsenide (GaAs)	Chip (Die) 1303-00-0 Total	% of Total Weight	
is semiconductor device and its homogenous materials comply rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via interpretain the interpretain of the date of this docume by is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammal pr://ul.com/global/eng/pages/offerings/industries/chemicals/plas e protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in this their original packing materials is true and correct to the best of a completeness and accuracy of data in this form because it has pplier information is often protected from disclosure as trade s comation is provided only as estimates of the average weight of clude trace levels of dopants, metals, and non-metal materials of	with EU Directive 2000 ernal design controls, I substance is NOT an nt, there is no credible latory scheme world-w bility standard for plas tics/ e made from polyvinyl its form concerning sul its knowledge and be been compiled based ecrets and some inforr these parts and the ar	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rusupplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device as reason to believe that the unavoidable impurity convide.  Itics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to postances restricted by RoHS in Microchip Technology lief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheemation may not have been provided by subcontract a verage weight of anticipated significant toxic metals is verage weight of anticipated significant toxic metals.	nd, to the be- centration of s to obtain a hold the pac- y Incorporate nology Incor ts provided t issemblers ai	st of Microchi the chemical test report at cking slip on t ed's semicond porated canno y raw materia nd raw materia	p Technology substance, if the outer box ductor devices of guarantee al suppliers. al suppliers.		Gallium arsenide (GaAs)  (mg) Total	Chip (Die) 1303-00-0 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight 100.00	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via into a chemical substance is absent from the list above, the chemical corporated's knowledge and belief as of the date of this docume y, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammal pi/lul.com/global/eng/pages/offerings/industries/chemicals/plase of protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  Corochip Technology Incorporated believes the information in this their original packing materials is true and correct to the best of a completeness and accuracy of data in this form because it has polier information is often protected from disclosure as trade so ormation is provided only as estimates of the average weight of	with EU Directive 2000 ernal design controls, I substance is NOT an nt, there is no credible latory scheme world-w bility standard for plas tics/ e made from polyvinyl its form concerning sub its knowledge and be been compiled based corets and some inforr it these parts and the a contained within silicon y, express or implied, v s subsidiaries are cont	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rosupplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device as reason to believe that the unavoidable impurity conside.  Itics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to use a set of the date listed in this form. Microchip Technology lief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheet mation may not have been provided by subcontract a verage weight of anticipated significant toxic metals in devices (silicon IC) in the finished parts.	nd, to the becentration of some stood the pactors of the pactors o	st of Microchi the chemical test report at cking slip on t ed's semicond porated canno by raw materia of raw materia. These estima	p Technology substance, if the outer box ductor devices of guarantee al suppliers. al suppliers. ates do not		Gallium arsenide (GaAs)  (mg) Total  Doped Gold	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	0.38
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via interpretation of the composition of the date of this docume by, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammal pr://ul.com/global/eng/pages/offerings/industries/chemicals/plas e protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in this their original packing materials is true and correct to the best of a completeness and accuracy of data in this form because it has pplier information is often protected from disclosure as trade in ormation is provided only as estimates of the average weight of clude trace levels of dopants, metals, and non-metal materials of crochip Technology Incorporated does not provide any warrant trranties provided by Microchip Technology Incorporated and its transport of the corporated and its provided by Microchip Technology Incorporated and its provided by Microchip Technology In	with EU Directive 200 ernal design controls, I substance is NOT an nt, there is no credible latory scheme world-w billity standard for plas tics/ e made from polyvinyl its knowledge and be its knowledge and be been compiled based screts and some inforr it these parts and the a ontained within silicon y, express or implied, y s subsidiaries are cont es.	295/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device are reason to believe that the unavoidable impurity condide. itide.  The semiconductor device are reason to believe that the unavoidable impurity condide.  The semiconductor device are the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to be stances restricted by RoHS in Microchip Technologi lief, as of the date listed in this form. Microchip Technologi lief, as of the date listed in this form. Microchip Technologi lief, as of the date listed in this form. Microchip Technologi lief, as of the date listed in this form. Microchip Technologi lief, as of the date listed in this form. Microchip to the vice and the semiconduction of the semiconduction in the semiconductio	nd, to the be- centration of s to obtain a hold the pace y Incorporate nology Incor ts provided b issemblers ai components rration. The e of sale. These direct or ind	st of Microchi the chemical test report at cking slip on t ed's semicond porated canno by raw materiand raw materi	p Technology substance, if the outer box ductor devices of guarantee al suppliers. al suppliers. ates do not ted product di in	0.15	Gallium arsenide (GaAs)  (mg) Total  Doped Gold	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	% of Total Weight  100  100.00  % of Total Weight  100.00  100.00	0.38

QDE WQFN 10:23 AM : 5/6/2014

Basic Substance  CAS Number  Sub-Component  Weight  Basic Substance  CAS Number  Sub-Component  Weight  Basic Substance  CAS Number  Sub-Component  Weight  We	MICROCHIP  Semiconductor Device Type	: QR 16 (Lead) QS	OP (H5)		nation Base A	•		-	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Stotistics    CAS Number   Stotistics		T Î	"Contained In"		l		48 50	(mg) Total	Mold Compound	% of Total Weight	58
Epoxy Result Not brompts, Not distiniting troubles    Tride Secret   Mod Compound   \$3553   2971   \$35,525   \$10,000   \$10,0			•		31			,	·		ī
Percentic Ream   Proceed: Ream   Procedic Re											
Emport Ceres Nevirolace   2600-082-2   Model Compound   1,421   1,188   14,210   Custom Biolics   1338-64   Model Compound   3,714   0,145   1,740   Custom Biolics   2000-082-2   2,40   Custom Biolics   2,40											
Carbon Black   133-364-1   Mod Compound   0.114   0.146   1.140   0.146   1.140   0.146   1.140   0.140   0.145   0.140   0.145   0.140   0.145   0.140   0.145   0.140   0.145   0.140   0.145   0.140   0.145   0.140   0.145   0.140   0.145   0.140   0.145   0.140   0.145   0.140   0.145   0.140   0.145   0.14											
Coppir   1449-90-8   Lead Frame   3.5,883   3.0014   356934											
Silver 17440224 Lead Frame 0.083 0.738 8.829 3142 (mgg) Total Lead Frame % of Total Weight Part Part Part Part Part Part Part Par						.,		Carbon Black			
Silver 7440-22-4 Lead Frame 0.716 0.599 7,157											
Propherous   1722-14-0   Lead Frame   0.047   0.039   470   10.058   170   10.058   170   10.058   170   10.058   170   10.058   170   10.058   170   10.058   170   10.058   170   10.058   170   10.058   170   10.058   170   10.058   170   10.058   170   170   10.058   170   170   10.058   170   170   10.058   170   170   170   170   10.058   170   170   170   170   10.058   170							31.42				37.57
Phosphorous 7723-14-0 Lead Frame 0.031 0.026 310 Silver 7440-224 De Attach 0.222 0.188 2.220 Epory resin 17ade Secret De Attach 0.000 0.050 0.000 0.050 0.000 Mistal code 17ade Secret De Attach 0.000 0.000 0.050 0.000											
Silver Fpoyresin Trade Secret Dia Altach 0.060 0.050 0.050 0.000 9											
Epoxy resin Trade Secret Die Attach 0.098 0.098 90 0.008											
Metal oxide   Trade Secret   Die Atlach   0.009   0.008   90   1.008   1.008   1.009   1.008   1.009   1.008   1.009   1.008   1.009											
Same-buytydisclorie 96-46-0 Die Atlasch 1740-21-3 Chip (Die) 1.756 1.472 1.75600 1.472 1.75600 1.472 1.75600 1.472 1.75600 1.472 1.75600 1.472 1.75600 1.472 1.75600 1.472 1.75600 1.472 1.75600 1.472 1.75600 1.472 1.75600 1.7760 1.480 1.77600 1.7760 1.480 1.77600 1.7760 1.480 1.77600 1.7760 1.480 1.77600 1.7760 1.480 1.77600 1.7760 1.480 1.77600 1.7760 1.480 1.77600 1.7760 1.480 1.77600 1.776	1 · 7 · ·							Phosphorous			
Silicon   7440-27-3   Chip (Dip   1-760   1-472   17.000   1-472											
Gold 7440-51-5 Plutry on external teach grow. Murit Brown 1 100.000 83.62 0 1,000,00	Gamma-butyrolactone						0.25	(mg) Total	Die Attach	% of Total Weight	0.3
Tin		7440-21-3	Chip (Die)			17,600		Silver	7440-22-4	74	
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU  1.47 Total (mg) Chip (Die) % of Total Weight  1.48 (mg) Total  Plating on external  1.48 (mg) Total  Plating on external  Total 100.00  Total Weight  1.47 Total (mg)  Chip (Die)  % of Total Weight  1.47 Total (mg)  Chip (Die)  % of Total Weight  1.48 (mg) Total  Plating on external  Plating	Gold	7440-57-5	Wire Bond						Trade Secret	20	
0.0836 g Total Mass  100.00  1.47 Total (mg)  1.47 Total (mg)  1.48 Chip (Die)  5.50 (mg) Total  100.00  5.50 (mg) Total	Tin	7440-31-5 Platin	g on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour					Metal oxide		3	
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoH-Of-Life Vehicles (ELV) Directive).  Joped Silicon 7440-21-3 100.  Joped Silicon 7440-21-5 100.00  Total (mg) Chip (Die) % of Total Weight plane with EU Directive 2002/95/EC (RoH-Of-Life Vehicles (ELV) Directive).  Deped Silicon 7440-21-3 100.  Deped Silicon 7440-21-3 100.  Deped Silicon 7440-21-3 100.  Total (mg) Chip (Die) % of Total Weight plane with EU Directive shas been verified via internal design controls, supplier declarations, and for analytical test data.  Deped Silicon 7440-21-3 100.  Deped Gold 7440-57-5 100.  Deped Go			TOTALS:	100.000	83.620	1,000,000		Gamma-butyrolactone	96-48-0	3	
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  1.47 Total (mg)  Chip (Die)  % of Total Weight the 2002/85/EC (RoHo-f-Life Vehicles (ELV) Directive). pliance 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  Total  Doped Silicon  7440-21-3  100.00  Total Weight Total  Doped Gold  7440-21-3  100.00  Total Weight Total  Doped Gold  7440-21-3  100.00  Wire Bond  % of Total Weight wire Bond  % of Total Weight Total  Doped Gold  7440-57-5  100.00  Doped Gold  7440-57-5  100.00  Doped Gold  7440-57-5  100.00  Doped Gold  7440-57-5  Total  Doped Gold  7440-57-5  100.00  Doped Gold  7440-57-5  Total  Doped Gold  7440-57-5  100.00  Doped Gold  7440-57-5  Total  Doped Gold  7440-57-5  Doped Gold  74		0.0836 a T	otal Mass						Total	100.00	2
intermical substance is absent from the list above, the chemical substance is NOT an intentional ingrelement in the sestion Microchip Technology prorated's knowledge and belief as of the date of this document, there is no redible 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 in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of regulatory concern for any regulatory scheme world-wide.  If in or below the threshold of the outer box and any the new that the new that the new that the new to had the packing slip on the outer box and any the new test of the outer box and any the new test of the outer box and in "reefs' may be made from PVC plastic.  It is neglected to hav	, , , , ,	rnal design controls, su			•		1.47	Total (mg)	Chip (Die)	% of Total Weight	1.76
//ul.com/global/eng/pages/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 ain "reels" may be made from PVC plastic.    Doped Gold   7440-57-5   100	ipinanioo intin tilo aboro 20 bilootiroo nao boon roimba ria int		pplier declarations, and for analytical test data.					Doped Silicon	7440-21-3		
in "reels" may be made from PVC plastic.    Doped Gold   T440-57-5   100	nemical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this documer s not below the threshold of regulatory concern for any regula	nt, there is no credible re atory scheme world-wide	tentional ingredient in the semiconductor device and bason to believe that the unavoidable impurity conce e.	ntration of the	chemical subs			Doped Silicon			
chip 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 Material Safety Data Sheets provided by raw material suppliers. Supplier leads 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 leads on the protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is ded 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 pants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Schip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product and interpretations and substitutions of sale. These are provided in Microchip's sations, sales order acknowledgement, and invoices.  Schip 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 sations, sales order acknowledgement, and invoices.  Schip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product and interpretations in the substitution of sale. These are provided in Microchip's sale and interpretations in Microchip's sations, sales order acknowledgement, and invoices.  Schip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product any sale and	hemical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this documer is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammab //ul.com/global/eng/pages/offerings/industries/chemicals/plast	nt, there is no credible re atory scheme world-wide bility standard for plastic cics/	tentional ingredient in the semiconductor device and bason to believe that the unavoidable impurity concere.  E. You can access the UL iQTM family of databases to the control of the cont	ntration of the	chemical subs	stance, if	0.50	·	Total	100.00	0.6
ranties provided by Microphrated does not provide any warranty, express or implied, with respect to the information provided in Microchip's antalegation. The exclusive, immediately appropriated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's annealed at 150°C for 1 hour  1.48 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour  % of Total Weight annealed at 150°C for 1 hour  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.	chemical substance is absent from the list above, the chemical proprated's knowledge and belief as of the date of this documer, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammabo://ul.com/global/eng/pages/offerings/industries/chemicals/plast	nt, there is no credible re atory scheme world-wide bility standard for plastic cics/	tentional ingredient in the semiconductor device and bason to believe that the unavoidable impurity concere.  E. You can access the UL iQTM family of databases to the control of the cont	ntration of the	chemical subs	stance, if	0.50	(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.6
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.	chemical substance is absent from the list above, the chemical proprated's knowledge and belief as of the date of this documer, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL.94 V0 flammab civil.com/global/eng/pages/offerings/industries/chemicals/plast protective "tubes" in which the specific product is shipped are ain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information in this roriginal packing materials is true and correct to the best of its pleteness and accuracy of data in this form because it has bee immation is often protected from disclosure as trade secrets and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the average weight of these parts and vided only as estimates of the videous parts and vid	nt, there is no credible re atory scheme world-wide pility standard for plastic ics/ e made from polyvinyl ch s form concerning subst knowledge and belief, a n compiled based on the I some information may d the average weight of	tentional ingredient in the semiconductor device and bason to believe that the unavoidable impurity concele.  s. You can access the UL iQTM family of databases to be a concess of the access of the a	o obtain a test old the packing ncorporated's a y Incorporated y vided by raw m and raw materi	report at  slip on the outline of the condition of the co	stance, if  uter box and  r devices in antee the ers. Supplier nformation is	0.50	(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.6
	chemical substance is absent from the list above, the chemical proporated's knowledge and belief as of the date of this documer, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL.94 V0 flammab: cylul.com/global/eng/pages/offerings/industries/chemicals/plast protective "tubes" in which the specific product is shipped are ain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information in this or original packing materials is true and correct to the best of its upleteness and accuracy of data in this form because it has bee rmation is often protected from disclosure as trade secretes and vided only as estimates of the average weight of these parts an opants, metals, and non-metal materials contained within silico rochip Technology Incorporated does not provide any warranty ranties provided by Microchip Technology Incorporated and its tations, sales order acknowledgement, and invoices.	nt, there is no credible re atory scheme world-wid- billity standard for plastic- ics/ a made from polyvinyl ch is form concerning subst knowledge and belief, a in compiled based on the I some information may d the average weight of on devices (silicon IC) in a, express or implied, wit subsidiaries are contain	tentional ingredient in the semiconductor device and tentional ingredient in the semiconductor device and tentional ingredient the unavoidable impurity concere.  s. You can access the UL iQTM family of databases to the concern tention of the concern tention of the concern tention of the concern tention of the date listed in this form. Microchip Technology In the date listed in this form. Microchip Technology is a ranges provided in Material Safety Data Sheets proving that the provided by subcontract assemblers anaticipated significant toxic metals components. The the finished parts.  The respect to the information provided in this declarated in Microchip's standard terms and conditions of	o obtain a test of the packing ncorporated's a y Incorporate vided by raw m and raw materi use estimates d cion. The exclus sale. These are	report at  slip on the or semiconducto d cannot guaraterial suppliers. In to not include sive, limited p	ter box and r devices in antee the ers. Supplier afteration is trace levels roduct licrochip's		(mg) Total  Doped Gold  (mg) 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	
Total 100.00	chemical substance is absent from the list above, the chemical rporated's knowledge and belief as of the date of this documer is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammab: "Julu-com/global/eng/pages/offerings/industries/chemicals/plast protective "tubes" in which the specific product is shipped are ain "reels" may be made from PVC plastic.  Tochip 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 mation is often protected from disclosure as trade secrets and rided only as estimates of the average weight of these parts an opants, metals, and non-metal materials contained within siliconchip Technology Incorporated does not provide any warranty ranties provided by Microchip Technology Incorporated and its tations, sales order acknowledgement, and invoices.	nt, there is no credible re atory scheme world-wide billity standard for plastic ics/ e made from polyvinyl ch is form concerning subst knowledge and belief, a n compiled based on the some information may d the average weight of on on devices (silicon IC) in r, express or implied, wit subsidiaries are contain	tentional ingredient in the semiconductor device and bason to believe that the unavoidable impurity concele.  Is. You can access the UL IQTM family of databases to a concern the concern that th	o obtain a test of the packing incorporated's a gy Incorporate vided by raw m and raw materi se estimates d cion. The exclus sale. These are	report at  I slip on the out semiconducto d cannot guara auterial supplie al suppliers. It to not include sive, limited p p provided in N , consequentia	ater box and r devices in antee the ers. Supplier aformation is trace levels roduct licrochip's		(mg) Total  Doped Gold  (mg) Total	Wire Bond 7440-57-5 Total  Plating on external leads (pins) - Matte Tin/annealed at 150°C for 1 hour 7440-31-5	% of Total Weight 100  % of Total Weight 100.00	

QR 16 QSOP 10:24 AM : 5/6/2014

CROCHIP Semiconductor Device	Type: OA, SN, TC,	SAE 08 (Lead) (SOIC) (Small Outline -150mil) (C2/CC)		ination Base opper Alloy (	•		•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	, , , ,	"Contained In"	% I otal					I	T	
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	<u> </u>
Copper	7440-50-8	Lead Frame	10.031	7.825	100,314		•	Total		
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		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	7440-66-6	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			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.020	263	0.59	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	5.850	75,000		Silver (Ag)	7440-22-4	75	
Doped Gold	7440-57-5	Wire Bond	0.200	0.156	2,000		Modified Epoxy Resin	13561-08-5	14	1
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.975	12,500	1	Diglycidylether of bisphenol-F	54208-63-8	8	1
		TOTALS:	100.000	78.000	1,000,000		Modified Amine	827-43-0	4	1
8/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive 200	12/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recas	st Directive) a	and with EU D	irective	5.85	(mg) Total	Chip (Die)	% of Total Weight	7.5
S/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified v mical substance is absent from the list above, the che	ia internal design controls, emical substance is NOT an	supplier declarations, and /or analytical test data.  intentional ingredient in the semiconductor device and, to the b	pest of Micro	chip Technolo	ogy .	5.85	(mg) Total  Doped Silicon	Chip (Die) 7440-21-3 Total	100	
B/EC (End-of-Life Vehicles (ELV) Directive).  Inner with the above EU Directives has been verified vertical substance is absent from the list above, the chorated's knowledge and belief as of the date of this do ow the threshold of regulatory concern for any regula g compounds used by Microchip meet the UL94 V0 flall.com/global/eng/pages/offerings/industries/chemicali	ia internal design controls, emical substance is NOT an cument, there is no credible tory scheme world-wide. mmability standard for plas s/plastics/	supplier declarations, and /or analytical test data.	pest of Micro of the chemi a test report	chip Technolo cal substance t at	ogy ., if any, is	0.16	Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
B/EC (End-of-Life Vehicles (ELV) Directive).  Inner with the above EU Directives has been verified vertical substance is absent from the list above, the chorated's knowledge and belief as of the date of this do ow the threshold of regulatory concern for any regula g compounds used by Microchip meet the UL94 V0 flall.com/global/eng/pages/offerings/industries/chemicali	ia internal design controls, emical substance is NOT an cument, there is no credible tory scheme world-wide. mmability standard for plas s/plastics/	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, to the be reason to believe that the unavoidable impurity concentration stics. You can access the UL iQTM family of databases to obtain	pest of Micro of the chemi a test report	chip Technolo cal substance t at	ogy ., if any, is		Doped Silicon	7440-21-3 Total	100	
S/EC (End-of-Life Vehicles (ELV) Directive).  iance with the above EU Directives has been verified was included in the list above, the character's knowledge and belief as of the date of this down the threshold of regulatory concern for any regula gompounds used by Microchip meet the UL94 Vo flall.com/global/eng/pages/offerings/industries/chemicalsotective "tubes" in which the specific product is shipp	ia internal design controls, emical substance is NOT an cument, there is no credible tory scheme world-wide. mmability standard for plas s/plastics/	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, to the be reason to believe that the unavoidable impurity concentration stics. You can access the UL iQTM family of databases to obtain	pest of Micro of the chemi a test report	chip Technolo cal substance t at	ogy ., if any, is		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	. 0.2
S/EC (End-of-Life Vehicles (ELV) Directive).  Iance with the above EU Directives has been verified was included in the list above, the chorated's knowledge and belief as of the date of this do we the threshold of regulatory concern for any regular grounds used by Microchip meet the UL94 Vo flat. com/global/eng/pages/offerings/industries/chemicals/otective "tubes" in which the specific product is shipp "reels" may be made from PVC plastic.  hip Technology Incorporated believes the information I packing materials is true and correct to the best of it curacy of data in this form because it has been compiled from disclosure as trade secrets and some informited from disclosure as trade secrets and some informited from disclosure as trade secrets and some informited.	ia internal design controls, emical substance is NOT an cument, there is no credibla tory scheme world-wide. immability standard for plat s/plastics/ ed are made from polyviny in this form concerning su s knowledge and belief, as ed based on the ranges pro attion may not have been ge weight of anticipated sig programments of the second programments of programments of programments of programments of pro	supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device and, to the be reason to believe that the unavoidable impurity concentration stics. You can access the UL iQTM family of databases to obtain	pest of Micro of the chemi a test report acking slip o ated's semice d cannot gu uppliers. Sup nformation is	chip Technolocal substance t at on the outer be conductor devi carantee the co	ogy , if any, is ox and ces in their ompleteness tion is often y as		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	. 0.2
SEC (End-of-Life Vehicles (ELV) Directive).  iance with the above EU Directives has been verified we inical substance is absent from the list above, the chorated's knowledge and belief as of the date of this do ow the threshold of regulatory concern for any regula g compounds used by Microchip meet the UL94 V0 flath. Com/global/eng/pages/offerings/industries/chemicals-otective "tubes" in which the specific product is shipp "reels" may be made from PVC plastic.  Thip Technology Incorporated believes the information in packing materials is true and correct to the best of it curacy of data in this form because it has been compiled from disclosure as trade secrets and some informates of the average weight of these parts and the average and materials contained within silicon devices (silicon thip Technology Incorporated does not provide any weight of these parts and the average materials contained within silicon devices (silicon this Technology Incorporated does not provide any weight of these parts and the average materials contained within silicon devices (silicon this Technology Incorporated does not provide any weight of these parts and the average materials contained within silicon devices (silicon this Technology Incorporated does not provide any weight of these parts and the average weight of the parts and the	ia internal design controls, emical substance is NOT an cument, there is no credible tory scheme world-wide. Immability standard for plate/plastics/ ed are made from polyviny in this form concerning sus is knowledge and belief, as ed based on the ranges protection may not have been gue weight of anticipated sig IC) in the finished parts.	supplier declarations, and /or analytical test data.  intentional ingredient in the semiconductor device and, to the be reason to believe that the unavoidable impurity concentration of the stics. You can access the UL iQTM family of databases to obtain a close of the databases to obtain the control of the databases to detain this form. Microchip Technology Incorporate of the database of the data	pest of Micro of the chemi a test report acking slip o ated's semice d cannot gu uppliers. Su information is de trace leve	chip Technolocal substance t at on the outer be onductor devi arantee the co pplier informa s provided onl els of dopants, imited produc	ogy , if any, is ox and ces in their ompleteness tion is often y as , metals, and		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.2

OA SNTC SAE 08 SOIC 10:24 AM : 5/6/2014

Semiconductor Device Type	. CAE 00 /	SOIC against 450in)		opper Alloy (	(Cu)		8.1 Electronics (e.g.	pc boards, display	s)	Marking and/or Pkg. Labeling e4
		"Contained In"	% Total	Ι		45.00	(mg) Total	Mold Compound	% ot Total	60
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		,		Weight	
Silica, vitreous Epoxy Resin (No bromine, No diantimony trioxide)	60676-86-0 Trade Secret	Mold Compound  Mold Compound	51.000 3.675	38.250 2.756	510,000 36,750		Silica, vitreous		85.0000 6.1250	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.756	36,750		Epoxy Resir Phenolic Resir	Trade Secret	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	7440-05-03	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:	100.000	75.000	1.000.000	3.62	(mg) Total	Chip (Die)	% of Total	4.82
		Total Mass	100.000	75.000	1,000,000		Doped Silicon	7440-21-3	Weight 100	
semiconductor device and its homogenous materials comply			ive 2011/65/F	U (RoHS Rec	ast Directive)		Bopod Gillioni	Total	100.00	
vith EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive		,		(11011011101	,					
pliance with the above EU Directives has been verified via int	ernal design contro	s, supplier declarations, and /or analy	tical test data	а.		0.08	(mg) Total	Wire Bond	% of Total Weight	0.1
nemical substance is absent from the list above, the chemica chip Technology Incorporated's knowledge and belief as of t entration of the chemical substance, if any, is not below the t	the date of this docu	ment, there is no credible reason to b	elieve that th				Doped Gold	7440-57-5	100.00	
ng compounds used by Microchip meet the UL94 V0 flammal t at http://ul.com/global/eng/pages/offerings/industries/chem		lastics. You can access the UL iQTM fa	amily of datal	bases to obta	in a test			Total	100.00	
rotective "tubes" in which the specific product is shipped ar e outer box and certain "reels" may be made from PVC plasti		nyl chloride (PVC) plastic. "Window er	nvelopes" use	ed to hold the	packing slip	2.25	(mg) Total	Plating on external leads (pins)	% of Total Weight	3
chip Technology Incorporated believes the information in thi conductor devices in their original packing materials is true a nology Incorporated cannot guarantee the completeness and ial Safety Data Sheets provided by raw material suppliers. St ave been provided by subcontract assemblers and raw material everage weight of anticipated significant toxic metals componined within silicon devices (silicon IC) in the finished parts.	is form concerning and correct to the be accuracy of data in upplier information rial suppliers. Inform	est of its knowledge and belief, as of the this form because it has been compile s often protected from disclosure as the nation is provided only as estimates of	ne date listed ed based on t rade secrets f the average	in this form. the ranges pro and some info weight of the	Microchip ovided in ormation may se parts and		Nickel	7440-02-0	94.50	
chip Technology Incorporated does not provide any warrant		bsidiaries are contained in Microchip'					Palladium	7440-05-3	5.00	
d product warranties provided by Microchip Technology Inco These are provided in Microchip's quotations, sales order ac	knowledgement, an	a invoices.								
d product warranties provided by Microchip Technology Inco	es to Material Conte	nt Declarations and shall not be liable reliance on the information in Materia		3 ,	,		Gold	7440-57-5	0.50	

SAF 08 SOIC 10:24 AM : 5/6/2014

ICROCHIP  Semiconductor Device	Type: SL 14 (Lead) SOI(	C(Small Outline - 450mill (D2/DC)		nation Base A	-			ogeneous Materials: g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	F Type. 3L 14 (Lead) 3ON	"Contained In"	% Total	ı				7	T	
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		
Iron	7439-89-6	Lead Frame	0.247	0.353	2,468	15.04	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.286	2,000		Copper	7440-50-8	95.54	10.0
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	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.038	263	1.07	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	10.740	75,000	1.07	Silver (Aa)	7440-22-4	75.00	0.10
Doped Gold	7440-57-5	Wire Bond	0.200	0.286	2,000		Modified Epoxy Resin	13561-08-5	14.00	
Tin		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	
1111	7440-31-3 Flating				1.000.000					
		TOTAL S.	100 000					827-42-0		
	0.1432 g To			143.200 Directive) and	,,	10.74	Modified Amine (mg) Total	827-43-0 Total Chip (Die)	3.50 100.00 % of Total Weight	7.5
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified v	omply with EU Directive 2002/95, ria internal design controls, sup	otal Mass EC (RoHS Directive), EU Directive 2011/65/EU (R	oHS Recast	Directive) and	l with EU	10.74	<u> </u>	Total	100.00 % of Total Weight	7.5
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified venemical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 VO flate.	omply with EU Directive 2002/95, ria internal design controls, suppermical substance is NOT an interate of this document, there is no ulatory concern for any regulator mmability standard for plastics.	otal Mass  (EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), EU Directive 2011/65/EU (RoHS Directive), and /or analytical test data.  Intional ingredient in the semiconductor device and credible reason to believe that the unavoidable by scheme world-wide.	oHS Recast	Directive) and state of Microchic centration of	I with EU	0.29	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.5
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vanemical substance is absent from the list above, the charology Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 fils/ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shippy	omply with EU Directive 2002/95, it internal design controls, suppermical substance is NOT an interact of this document, there is no ulatory concern for any regulator immability standard for plastics.	otal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (ROHS DIRECTIVE)	nd, to the be impurity con-	Directive) and st of Microchi centration of test report at	with EU		(mg) Total  Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
semiconductor device and its homogenous materials of tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). bliance with the above EU Directives has been verified whemical substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the dical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 flat/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shippind certain "reels" may be made from PVC plastic.	omply with EU Directive 2002/95, it internal design controls, suppermical substance is NOT an interact of this document, there is no ulatory concern for any regulator immability standard for plastics.	otal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (ROHS DIRECTIVE)	nd, to the be impurity con-	Directive) and st of Microchi centration of test report at	with EU		(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	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). oliance with the above EU Directives has been verified vehemical substance is absent from the list above, the chanology incorporated's knowledge and belief as of the delical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 file //ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp	omply with EU Directive 2002/95, in internal design controls, suppermical substance is NOT an interate of this document, there is no ulatory concern for any regulatory concern for any regulatory. It is substantially substantially substantially and are made from polyvinyl chick in this form concerning substantial to the best of its knowledge and because it has been compiled in disclosure as trade secrets a tes of the average weight of the	otal Mass JEC (RoHS Directive), EU Directive 2011/65/EU (R Directive), EU Directive 2011/65/EU (	nd, to the be impurity constant a hold the pace y Incorporate hip Technolo y Data Sheets ad by subconsignificant to:	Directive) and st of Microchi centration of test report at king slip on t d's semiconc gy Incorporat provided by tract assemb	with EU  ip the he outer luctor luctor raw lers and		(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).  collance with the above EU Directives has been verified vehicles with the above EU Directives has been verified vehicles and belief as of the depote the collaboration of the collaboration of the depote the collaboration of th	omply with EU Directive 2002/95, and internal design controls, suppermical substance is NOT an interact of this document, there is not ulatory concern for any regulate immability standard for plastics. s/plastics/ sed are made from polyvinyl chlowing the concerning substant to the best of its knowledge and because it has been compiled om disclosure as trade secrets a tes of the average weight of the list, and non-metal materials contains and its subsidiaries are contained to subsid	paral Mass  JEC (RoHS Directive), EU Directive 2011/65/EU (Robie Comments)  Jec (RohS Directive), EU Directive 2011/65/EU (Rob	nd, to the be impurity constant a hold the pace y Incorporate hip Technolo / Data Sheets ed by subconsignificant to inshed parts.	Directive) and st of Microchi centration of test report at king slip on t d's semiconc gy Incorporat is provided by tract assemb ticc metals coi	the outer luctor raw lers and mponents.		(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	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Iliance with the above EU Directives has been verified we the service of the characteristic structure	omply with EU Directive 2002/95.  It internal design controls, supplemical substance is NOT an interate of this document, there is no ulatory concern for any regulate immability standard for plastics. If yelding it is substant to the best of its knowledge and the best of its knowledge and because it has been compiled mit in this form concerning substant to the best of its knowledge and because it has been compiled and its of the average weight of the substant its of the substant its of the substant its subsidiaries are contained in the subsidiaries are subsidia	pital Mass  JEC (RoHS Directive), EU Directive 2011/65/EU (Roblem 1988)  Jec (Roblem 1988)	nd, to the be impurity constant a hold the pace y Incorporate hip Technolo y Data Sheets d by subconsignificant to ished parts. ration. The e of sale. These direct or ind	Directive) and st of Microchi centration of test report at king slip on t d's semiconc gy Incorporat provided by tract assemb tic metals coi xclusive, limit e are provide irect, conseq	ip the outer luctor raw lers and mponents.	0.29	(mg) Total  Doped Silicon  (mg) Total  Doped 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	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2

SL 14 SOIC 10:25 AM : 5/6/2014

MICROCHIP  Semiconductor Device Typ	e: TF, F, OE, SO, SL	16 (Lead) SOIC (Wide Outline - 300mil) (D9 / I	Со	nation Base A	•		Package Homoge 8.1 Electronics (e.g. p			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, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.299	18.830	42,991		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.299	18.830	42,991		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.720	7.532	17,197	i	Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.211	0.922	2,106	i	Carbon Black		0.30	
Copper	7440-50-8	Lead Frame	25.499	111.685	254,990		Garbert Black	Total	100.00	
Обрреі	7440-30-0	Lead I fame	20.400	111.005	254,550				% 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	0.033	0.096	220	l	Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.370	1.621	3,700	1	Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.100	0.438	1,000		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.015	0.066	150		1 Hospilorous	Total	100.00	
Wetai Oxide	Trade Secret	DIE Attach	0.013	0.000	130			TOTAL	% of Total	
Gamma-butyrolactone	96-48-0	Die Attach	0.015	0.066	150	2.19	(mg) Total	Die Attach		0.5
Silicon	7440-21-3	Chip (Die)	1.850	8.103	18.500		Silver	7440-22-4	Weight 74	
Gold	7440-21-3	Wire Bond	0.090	0.394	900					
							Epoxy resin	Trade Secret	20	
Tin	7440-31-5 Plating of	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.680	2.978	6,800		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	438.000	1,000,000		Gamma-butyrolactone	96-48-0 <b>Total</b>	3 <b>100.00</b>	
s semiconductor device and its homogenous materials comply	0.4380 g To									
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	•	, ,	(RoHS Recast	Directive) an	d with EU	8.10	Total (mg)	Chip (Die)	% of Total Weight	1.85
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	•	, ,	(RoHS Recast	t Directive) an	d with EU	8.10	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3		1.85
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via interpretable. The chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical hology incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulators.	ternal design controls, sup al substance is NOT an into if this document, there is no ory concern for any regulato	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device credible reason to believe that the unavoidabory scheme world-wide.	e and, to the b	est of Microcl	hip f the	8.10	,		100 100.00	1.85
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via into 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 regulatoring compounds used by Microchip meet the UL94 V0 flamma	ternal design controls, sup al substance is NOT an into if this document, there is no ory concern for any regulate ability standard for plastics	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device credible reason to believe that the unavoidabory scheme world-wide.	e and, to the b	est of Microcl	hip f the	0.39	,	7440-21-3	Weight 100	0.09
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance with the above EU Directives has been verified via into chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulato Iding compounds used by Microchip meet the UL94 V0 flammap://ul.com/global/eng/pages/offerings/industries/chemicals/plae protective "tubes" in which the specific product is shipped a	ternal design controls, sup al substance is NOT an into if this document, there is no ory concern for any regulate ability standard for plastics stics/	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device c credible reason to believe that the unavoidatory scheme world-wide You can access the UL iQTM family of databa	e and, to the b ble impurity co ases to obtain	est of Microcl ncentration of a test report a	hip f the at		Doped Silicon	7440-21-3 Total	100 100.00 % of Total	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via intercept of the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulate directions of the date of the compounds used by Microchip meet the UL94 V0 flamma of the compounds used by Microchip meet the UL94 V0 flamma of the compounds used by Microchip meet the UL94 V0 flamma of the complete of the compounds of the compounds of the specific product is shipped at and certain "reels" may be made from PVC plastic.  Torochip Technology Incorporated believes the information in the rices in their original packing materials is true and correct to the trial suppliers. Supplier information is often protected from dependent of the protected from the real suppliers. Information is provided only as estimates	ternal design controls, sup al substance is NOT an into if this document, there is no ory concern for any regulate ability standard for plastics istics/ are made from polyvinyl chl his form concerning substa he best of its knowledge an cause it has been compiled lisclosure as trade secrets of the average weight of the	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device credible reason to believe that the unavoidabory scheme world-wide.  You can access the UL iQTM family of databoride (PVC) plastic. "Window envelopes" used inces restricted by RoHS in Microchip Technol delief, as of the date listed in this form. Microse do not the ranges provided in Maerial Safand some information may not have been provides parts and the average weight of anticipate as the seminary of the parts and the average weight of anticipate and the average weight of anticipate.	e and, to the b ble impurity co ases to obtain I to hold the pa ogy Incorpora rochip Techno ety Data Sheet rided by subcc ed significant t	est of Microcl ncentration of a test report a acking slip on ted's semicon logy incorpora is provided by intract assemi oxic metals c	the outer adductor ated cannot y raw blers and		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	Weight 100 100.00 % of Total Weight	
in seminonautor device and its nonogenous materials compilective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via into a chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulator olding compounds used by Microchip meet the UL94 V0 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped at a x and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to the arantee the completeness and accuracy of data in this form between the suppliers. Supplier information is often protected from divingential suppliers. Information is provided only as estimates are estimates do not include trace levels of dopants, metals, a crochip Technology Incorporated does not provide any warranter provided by Microchip Technology Incorporated and its crochip's quotations, sales order acknowledgement, and invoices in the control of the provide and incorporated and incorp	ternal design controls, sup al substance is NOT an into if this document, there is no ory concern for any regulate ability standard for plastics istics/ ure made from polyvinyl chl his form concerning substa he best of its knowledge an cause it has been compile lisclosure as trade secrets of the average weight of the and non-metal materials county, express or implied, with ts subsidiaries are contain	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device credible reason to believe that the unavoidabory scheme world-wide.  You can access the UL iQTM family of databoride (PVC) plastic. "Window envelopes" used inces restricted by RoHS in Microchip Technol delief, as of the date listed in this form. Microbief and some information may not have been provises parts and the average weight of anticipate trained within silicon devices (silicon IC) in the respect to the information provided in this de	e and, to the bole impurity consess to obtain to hold the party occhip Techno ety Data Sheet vided by subcod significant to finished party claration. The	est of Microci ncentration of a test report a acking slip on ted's semicon logy incorpora is provided by intract assem oxic metals cos.	hip f the  at the outer ductor ated cannot r raw blers and omponents.		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	Weight 100 100.00 % of Total Weight	
npliance with the above EU Directives has been verified via introchemical 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 regulated ding compounds used by Microchip meet the UL94 V0 flamma:///ul.com/global/eng/pages/offerings/industries/chemicals/plaprotective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information in the ices in their original packing materials is true and correct to trantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from different suppliers. Supplier information is often protected from different suppliers. Information is provided only as estimates se estimates do not include trace levels of dopants, metals, a prochip Technology Incorporated does not provide any warranter anties provided by Microchip Technology Incorporated and in	ternal design controls, sup al substance is NOT an into if this document, there is no ory concern for any regulate ability standard for plastics sistics/ are made from polyvinyl chl his form concerning substate he best of its knowledge and icause it has been compiled lisclosure as trade secrets of the average weight of the ind non-metal materials country, express or implied, with ts subsidiaries are contain ces.	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device or credible reason to believe that the unavoidatory scheme world-wide.  You can access the UL iQTM family of databorical content of the content of t	e and, to the bole impurity consess to obtain I to hold the particular according Technology Incorporate Technology State	est of Microcl ncentration of a test report a acking slip on ted's semicon logy Incorpora is provided by ontract assem oxic metals co s. exclusive, lim se are provided direct, conse	the outer the outer adductor ated cannot y raw blers and omponents. bited product ed in quential or	0.39	Doped Silicon  (mg) Total  Doped Gold	7440-21-3  Total  Wire Bond  7440-57-5  Total  Plating on external leads (pins) - Matte Tin	Weight 100 100.00 % of Total Weight 100 100.00	0.09
active 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via interpretation of the date of	ternal design controls, sup al substance is NOT an into if this document, there is no ory concern for any regulate ability standard for plastics sistics/ are made from polyvinyl chl his form concerning substate he best of its knowledge and icause it has been compiled lisclosure as trade secrets of the average weight of the ind non-metal materials country, express or implied, with ts subsidiaries are contain ces.	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device or credible reason to believe that the unavoidatory scheme world-wide.  You can access the UL iQTM family of databorical content of the content of t	e and, to the bole impurity consess to obtain I to hold the particular and the particular	est of Microcl ncentration of a test report a acking slip on ted's semicon logy Incorpora is provided by ontract assem oxic metals co s. exclusive, lim se are provided direct, conse	the outer the outer adductor ated cannot y raw blers and omponents. bited product ed in quential or	0.39	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	Weight 100 100.00 % of Total Weight 100 100.00	0.09

TF F OE SO SL 16 SOIC 10:25 AM : 5/6/2014

Semiconductor Device Typ	e: SL 16 (Lead)	) SOIC (Small Outline - 150mil) (D7 / DV)		nation Base A	•		•	mogeneous 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	60.00	(mg) Total	Mold Compound	% ot Total Weight	38.12
Silica, vitreous	60676-86-0	Mold Compound	32.402	51.001	324,020		Silica, vitreous	60676-86-0	85.00	
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	1	Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.934	1.470	9,339		Epoxy, Cresol Novolac		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			Total	100.00	!
Iron	7439-89-6	Lead Frame	0.597	0.940	5,971	40.00	(mg) Total	Lead Frame	% of Total Weight	25.41
Silver	7440-22-4	Lead Frame	0.484	0.762	4,841		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.032	0.050	318		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.021	0.033	210		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	2.618	4.120	26,175		Zinc	7440-66-6	0.13	
Diester Resin	94-80-4	Die Attach	0.524	0.824	5,235		Phosphorous	7723-14-0	0.08	
Functionalized Urethane Resin	72869-86-4	Die Attach	0.175	0.275	1,745			Total	100.00	
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		75	
Silicon	7440-21-3	Chip (Die)	3.180	5.005	31.800		Diester Resin		15	
Gold	7440-57-5	Wire Bond	1,210	1.905	12,100	Fund	ctionalized Urethane Resin		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		3	
1111	7 440 01 0	TOTALS:	100.000	157.400	1.000.000					
							Enovy Resin	13561-08-5	3	
s semiconductor device and its homogenous materials complective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		g Total Mass			,,	5.01	Epoxy Resin	13561-08-5 Total Chip (Die)	Ü	3.18
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic thnology Incorporated's knowledge and belief as of the date of	y with EU Directive 2 ternal design contro al substance is NOT f this document, the	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU  Pls, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device tre is no credible reason to believe that the unavoidable	(RoHS Recast	Directive) and	with EU	5.01		Total	100.00	3.18
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic	y with EU Directive 2 ternal design contro al substance is NOT f this document, the rn for any regulatory ability standard for p	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU obs, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable scheme world-wide.	(RoHS Recast and, to the be e impurity con	Directive) and est of Microchi ecentration of the contraction of the c	with EU	5.01	Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	3.18
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic chnology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory conceiding compounds used by Microchip meet the UL94 V0 flammar.	y with EU Directive 2 ternal design contro al substance is NOT f this document, the n for any regulatory ability standard for p stics/	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU obls, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device its no credible reason to believe that the unavoidable scheme world-wide.  Plastics. You can access the UL iQTM family of database.	(RoHS Recast and, to the be e impurity con ses to obtain a	Directive) and est of Microchi centration of the test report at	with EU p the chemical		Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance 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 conceiding compounds used by Microchip meet the UL94 V0 flamma://ul.com/global/eng/pages/offerings/industries/chemicals/plater protective "tubes" in which the specific product is shipped a	y with EU Directive 2 ternal design contro al substance is NOT f this document, the n for any regulatory ability standard for p stics/ re made from polyvi nis form concerning ne best of its knowle cause it has been or a sa trade secrets an le weight of these pa	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU obs, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable scheme world-wide.  Idastics. You can access the UL iQTM family of database in you can access the UL iQTM family of database in your considerable. "Window envelopes" used to substances restricted by RoHS in Microchip Technological and belief, as of the date listed in this form. Microchiplied based on the ranges provided in Material Safe did some information may not have been provided by starts and the average weight of anticipated significant to	(RoHS Recast  and, to the be impurity con ses to obtain a to hold the pace gy Incorporate ochip Technolo sty Data Sheet ubcontract ass oxic metals co	Directive) and est of Microchi identration of the test report at each seemicond graph for the ed's semicond graph for corporate so provided by semblers and in	with EU  p the chemical  ne outer box  uctor ed cannot raw material aw material		Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic thology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory conceiving compounds used by Microchip meet the UL94 V0 flammo://ul.com/global/eng/pages/offerings/industries/chemicals/platerotive "tubes" in which the specific product is shipped at certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information in the profession of the profession of data in this form be pilers. Supplier information is often protected from disclosure pilers. Information is provided only as estimates of the average of the average of the profession of the average of the average of the profession of the average of the average of the profession of the average of the average of the average of the profession of the average of the average of the average of the profession of the average of the	y with EU Directive 2 ternal design contro al substance is NOT this document, the n for any regulatory ability standard for p stics/ re made from polyvi his form concerning he best of its knowle cause it has been co has trade secrets an he weight of these pa metal materials cor ty, express or implie ts subsidiaries are c	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU obs, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable scheme world-wide.  Diastics. You can access the UL iQTM family of database in you can access the UL iQTM family of database in your considerable. The provided in Material Safe do some information may not have been provided by substance information may not have been provided by substance weight of anticipated significant antained within silicon devices (silicon IC) in the finisher and, with respect to the information provided in this decay, with respect to the information provided in this decay, with respect to the information provided in this decay.	(RoHS Recast  and, to the be e impurity con ses to obtain a to hold the pace gy Incorporate ochip Technolo sty Data Sheets ubcontract ass oxic metals co d parts.	Directive) and est of Microchi identration of the test report at cking slip on the ed's semicond gy Incorporat s provided by semblers and components. The exclusive, limit	with EU  p the chemical me outer box uctor ed cannot raw material raw material rese ed product		Total (mg)  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	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via in  chemical substance is absent from the list above, the chemic  chnology Incorporated's knowledge and belief as of the date of  stance, if any, is not below the threshold of regulatory conceived  in compounds used by Microchip meet the UL94 V0 flamms  chulcom/global/eng/pages/offerings/industries/chemicals/platerative  protective "tubes" in which the specific product is shipped at  certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information in the  control in their original packing materials is true and correct to  control to the completeness and accuracy of data in this form  be  piliers. Supplier information is often protected from disclosur  piliers. Information is provided only as estimates of the average  mates do not include trace levels of dopants, metals, and nor  rochip Technology Incorporated does not provide any warran  ranties provided by Microchip Technology Incorporated and incorporat	y with EU Directive 2 ternal design contro al substance is NOT f this document, the n for any regulatory ability standard for p stics/ re made from polyvi his form concerning he best of its knowle cause it has been co as trade secrets an he weight of these p metal materials cor ty, express or implie ts subsidiaries are c hese.  es to Material Conte hrs' reliance on the in	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU obs, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable recheme world-wide.  Plastics. You can access the UL iQTM family of database inyl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technologiege and belief, as of the date listed in this form. Microchipiled based on the ranges provided in Material Safe and some information may not have been provided by stants and the average weight of anticipated significant that and the average weight of anticipated significant exists and anticipated significant	and, to the be e impurity conses to obtain a to hold the pace of t	Directive) and est of Microchi icentration of the test report at cking slip on the ed's semicond orgy incorporate s provided by semblers and to imponents. The exclusive, limit se are provided	with EU  p the chemical  ne outer box  uctor ed cannot raw material raw material ese ed product d in  uential or	1.90	Total (mg)  Doped Silicon  (mg) Total  Doped 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	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	1.21

SL 16 SOIC 10:25 AM : 5/6/2014

Semiconductor Device Type	2: SO 18 (Lead) SOIC (	(Wide Outline - 300mil) (F2 / F I)	-	nation Base A	. ,		•	ogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Ocimical ductor Device Type	7. 00 10 (Lead) 3010 (	"Contained In"	% Total	1			1		1	
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	383.84	(mg) Total	Mold Compound	% ot Total Weight	79.8
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		
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 Die Attach	0.105 0.056	0.505 0.271	1,050 563		Phosphorous	7723-14-0 <b>Total</b>	0.08	]
Diglycidylether of bisphenol-F Modified Amine	54208-63-8 827-43-0	Die Attach	0.056	0.271	263	3.61	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	36.075	75.000	3.01	Silver (Ag)	7440-22-4	75	0.75
Gold	7440-57-5	Wire Bond	0.200	0.962	2,000		Modified Epoxy Resin	13561-08-5	14	
		on external leads (pins) - Matte Tin / annealed at 150°C for 1 h		6.013	12.500	Dia	lycidylether of bisphenol-F	54208-63-8	8	
						Dig				
Tin	7440010		e. 100 000	481 NNN	1 000 000		Modified Amine	827-43-0	1	
IIN semiconductor device and its homogenous materials complyctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.4810 g To	TOTA		481.000 Directive) and	1,000,000 with EU	36.08	Modified Amine  Total (mg)	827-43-0 Total Chip (Die)	4 100.00 % of Total Weight	7.5
semiconductor device and its homogenous materials comply	0.4810 g To with EU Directive 2002/95, ernal design controls, suppl substance is NOT an inte	TOTA  tal Mass //EC (RoHS Directive), EU Directive 2011/65/l  plier declarations, and /or analytical test dat entional ingredient in the semiconductor dev	U (RoHS Recast D	Directive) and	with EU	36.08		Total	100.00 % of Total Weight	7.5
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 inthemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory concerning compounds used by Microchip meet the UL94 V0 flamma I/ul.com/global/eng/pages/offerings/industries/chemicals/plas	0.4810 g To with EU Directive 2002/95.  ernal design controls, supplet substance is NOT an intending document, there is not a for any regulatory schemolity standard for plastics.	Atal Mass  //EC (RoHS Directive), EU Directive 2011/65/l  plier declarations, and /or analytical test dat  entional ingredient in the semiconductor devolved	U (RoHS Recast D  ce and, to the besible impurity concludes to obtain a t	Directive) and at of Microchip entration of the	with EU	36.08	Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.5
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 interpretable the plant of the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical plant of the date of the compound of the chemical substance, if any, is not below the threshold of regulatory concerning compounds used by Microchip meet the UL94 V0 flamma	0.4810 g To with EU Directive 2002/95.  ernal design controls, supplet substance is NOT an intending document, there is not a for any regulatory schemolity standard for plastics.	Atal Mass  //EC (RoHS Directive), EU Directive 2011/65/l  plier declarations, and /or analytical test dat  entional ingredient in the semiconductor devolved	U (RoHS Recast D  ce and, to the besible impurity concludes to obtain a t	Directive) and at of Microchip entration of the	with EU		Total (mg)  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	
semiconductor device and its homogenous materials comply citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via interpretable in the substance is absent from the list above, the chemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory concerning compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plas	0.4810 g To with EU Directive 2002/95. ernal design controls, supple substance is NOT an intentities document, there is not for any regulatory schembility standard for plastics. tics/ e made from polyvinyl chlores form concerning substance best of its knowledge an ause it has been compiler as trade secrets and some weight of these parts and	Atal Mass  //EC (RoHS Directive), EU Directive 2011/65//  plier declarations, and /or analytical test dat entional ingredient in the semiconductor dev to credible reason to believe that the unavoid the world-wide.  You can access the UL iQTM family of data oride (PVC) plastic. "Window envelopes" us nces restricted by RoHS in Microchip Techn de belief, as of the date listed in this form. Mi delased on the ranges provided in Materials be einformation may not have been provided to de the average weight of anticipated significa	U (RoHS Recast E	oirective) and  at of Microchip entration of the est report at king slip on the d's semicondi yy Incorporate provided by re- emblers and re-	with EU  ne chemical  e outer box  actor d cannot aw material aw material		Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
semiconductor device and its homogenous materials comply citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via interpretation of the chemical substance is absent from the list above, the chemical sunology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory concerting compounds used by Microchip meet the UL94 V0 flammal/ul.com/global/eng/pages/offerings/industries/chemicals/plasprotective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  The protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  The protective the completeness and accuracy of data in this form beto liters. Supplier information is often protected from disclosure tilers. Information is provided only as estimates of the averagilers. Information is provided only as estimates of the averagilers.	0.4810 g To with EU Directive 2002/95.  ernal design controls, supplet substance is NOT an intention of the control of this document, there is not for any regulatory schemolility standard for plastics. tics/  e made from polyvinyl chlored of the compiler of the control of	tal Mass //EC (RoHS Directive), EU Directive 2011/65// plier declarations, and /or analytical test dat entional ingredient in the semiconductor dev to credible reason to believe that the unavoid the world-wide.  You can access the UL iQTM family of data oride (PVC) plastic. "Window envelopes" us nces restricted by RoHS in Microchip Techn dibelief, as of the date listed in this form. Mi dibelief, as of the date listed in this form. Mi dibelief, as of the date listed in Materials is information may not have been provided b dithe average weight of anticipated significa within silicon devices (silicon IC) in the finis	U (RoHS Recast E	oirective) and  at of Microchip entration of the est report at king slip on the d's semicondi gy Incorporate provided by remblers and remponents. The colusive, limite	with EU  ne chemical  e outer box  actor ad cannot aw material aw material asse		Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (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	
semiconductor device and its homogenous materials comply citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via interpretation of the chemical substance is absent from the list above, the chemical anology Incorporated's knowledge and belief as of the date of stance, if any, is not below the threshold of regulatory concerting compounds used by Microchip meet the UL94 V0 flammal //ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped an certain "reels" may be made from PVC plastic.  The protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  The protective information in the cess in their original packing materials is true and correct to the antee the completeness and accuracy of data in this form be obliers. Supplier information is often protected from disclosure obliers. Supplier information is often protected from disclosure places. Information is provided only as estimates of the averagnates do not include trace levels of dopants, metals, and non-opchip Technology Incorporated does not provide any warrant anties provided by Microchip Technology Incorporated and it	0.4810 g To with EU Directive 2002/95, ernal design controls, supplet substance is NOT an intending the substance is NOT an intending the substance is not any regulatory schemolity standard for plastics. It is standard for plastics. It is standard for plastics in the substance is made from polyvinyl chlores in the substance is standard for plastics. It is substance is substance in the substance is substance in the substance in	tal Mass  /EC (RoHS Directive), EU Directive 2011/65/l plier declarations, and /or analytical test dat entional ingredient in the semiconductor dev o credible reason to believe that the unavoid ne world-wide.  You can access the UL iQTM family of data oride (PVC) plastic. "Window envelopes" us nnces restricted by RoHS in Microchip Techn and belief, as of the date listed in this form. Mi d based on the ranges provided in Material S is information may not have been provided be d the average weight of anticipated significa within silicon devices (silicon IC) in the finis a respect to the information provided in this a ed in Microchip's standard terms and condit larations and shall not be liable for any dama	U (RoHS Recast D  ce and, to the bestble impurity conc  bases to obtain a t  d to hold the pace  crochip Technolog  afety Data Sheets  subcontract asset  t toxic metals cor  ned parts.  eclaration. The ex-  cons of sale. These  ges, direct or indi	oirective) and  at of Microchip entration of the est report at  king slip on the d's semicondu yy Incorporate provided by r emblers and r inponents. The exclusive, limite exercity are provided rect, conseque	with EU  ne chemical  e outer box  uctor  id cannot aw material aw material ese  d product in  ential or	0.96	Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (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	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2

SO 18 SOIC 10:26 AM : 5/6/2014

Basic Substance	MICROCHIP  Semiconductor Device Tyr	ne: SO 20 (Lead)	) SOIC (Wide Outline - 300mil) (G5 / GS)		nation Base opper Alloy (C	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	Connectination Device Typ	20 20 (2000)		% Total		1			1		
Silear, virtuals:  Equation Result (No. Birt.)  Equation Result (No. Birt.	Basic Substance	CAS Number			mg/part	nnm	389.37	(mg) Total	Mold Compound	% ot Total Weight	71.84
Egony Reson (No bominum. No distintimory incorporation. Part Secret Mod Compound 4,00 20184 4,002 Phenotic Reson (Secret Mod Phenotic R								Silica vitreous	60676-86-0	85.00	
Phenoic Rear No 8 / CLS SIO3 No Garminov toologis   Table Secret   Mod Compound   4,400   23,944   44,002   500						,					
Epsay_Created Nordact											
Composition Stack 1,333-66-4 Most Compound 22,735 134 (68) 2,7457 140.22 (min) Total 10,000 1											
Copper   7440-50-8   Leas Frame   2,47.35   33.062   27.34   27.34   10.00   10.15   10.00   1											
Since 17440224 Lead Frame 0.689 3.286 6.084 4892 (prox.) Total (prox.) T						,		Garbon Black			
Shere							140.22	(mg) Total			25.00
Trace 7440-69-69 Lead Frame 0.032 0.178 324 50 16 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							140.32				25.89
Phosphorous   772-14-0   Load Frame   0.021   0.116   214   Silver   7740-22-4   191   245   Silver   7740-22-4   191   245   Silver   7740-22-4   191   245   Silver   7740-06-6   0.13   245   Silver   7740-06-6   0.14   245   Silver   7740-06-6   0.15   S											
Silver 7440-224 De Attach 0.252 1364 2.516  Beta oude 1 Trade Secret De Attach 0.068 0.369 869  Commendation of Trade Secret De Attach 0.061 0.065 0.068 0.069 102  Commendation of Trade Secret De Attach 0.061 0.065 102  Commendation of Trade Secret De Attach 0.061 0.065 102  Commendation of Trade Secret De Attach 0.061 0.065 102  Commendation of Trade Secret De Attach 0.061 0.065 102  Commendation of Trade Secret De Attach 0.061 0.065 102  Commendation of Trade Secret De Attach 0.061 0.065 102  Trade Secret De Attach 0.061 0.062 0.062 0.068 0.060 102  Trade Secret De Attach 0.062 0.068 0.060 102  Trade Secret De Attach 0.062											
Epoxy resim   Trade Secret   Die Attach   0.088   0.369   680   14											
Metal oxide 1 Trade Secret Die Attach 0.010 0.055 102 1.44 (mg) Total 2 Die Attach 0.34 (Samma-bulypriachcone 96-48-0 Die Attach 0.010 0.055 102 1.44 (mg) Total 2 Die Attach 5.61 (Total Weight 0.34 (Samma-bulypriachcone) 1.44											
Salton 7440-21-3 Chip (Die) 1.150 6.233 11,000 542,000 1.000,000 542,000 5								Phosphorous		0.00	
Silicon 7440:21-3   Chip (Die)   1.150   6.233   11,500   5.542   1,000   Metal doxide   1.000   Metal doxide   1.											
Epocy resin Trade Secret 20  Tran 7440-91-5 Paragra external task graps - Mest Trail 2 Trade Secret 3 Trade Trade Secret 3 Trade Secret 3 Trade Secret 3 Trade Secret 3 Tra	Gamma-butyrolactone	96-48-0	Die Attach	0.010	0.055	102	1.84	(mg) Total	Die Attach	% of Total Weight	0.34
## Transparse   Tr	Silicon	7440-21-3	Chip (Die)	1.150	6.233	11,500		Silver	7440-22-4	74	
O.5420 g Total Mass  O.5420 g Silicon  O.5420 g Sil	Gold	7440-57-5	Wire Bond	0.100	0.542	1.000		Epoxy resin	Trade Secret	20	
O.5420 g Total Mass  O.5420 g Silicon  O.5420	Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.680	3.686	6.800		Metal oxide	Trade Secret	3	
0.5420 g Total Mass  O.5420 g				100.000	542,000	1.000.000		Gamma-butyrolactone		3	
his semiconductor device and its homogenous materials comply with EU Directive 2029/5F/EC (RoHS Directive). EU Directive) 2011/65/EU (RoHS Recast Directive) and with EU circlive 2020/5S/EC (End-of-Life Vehicles (EUV) Directive).  Chip (Die)  Chip		0.5420 ~				.,,					
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 behavior properated ks not provided and the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.    O.54		y with EU Directive 200	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (	RoHS Recast	Directive) and	with EU	6.23	Total (mg)	Chip (Die)	% of Total Weight	1.15
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ he 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 certain "reels" may be made from PVC plastic.    Dope Gold   T440-57-5   100	irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		, ,	RoHS Recast	Directive) and	with EU	6.23	1	7440-21-3	100	1.15
icrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor evices 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 uarantee the 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 puppliers. Supplier information is protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material puppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals components. These stimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  icrochip 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 icrochip's quotations, sales order acknowledgement, and invoices.  3.69 (mg) Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour  3.69 (mg) Total Vision of the material content Declarations and shall not be liable for any damages, direct or indirect, consequential or the writer of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports  Tin 7440-31-5 100.00	irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date o	ternal design controls, al substance is NOT ar f this document, there	supplier declarations, and /or analytical test data.  n intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable	and, to the be	est of Microchi	þ	6.23	1	7440-21-3	100	1.15
icrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor evices 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 uarantee the 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 uppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material uppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These stimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Icrochip 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 an information in material content Declarations and shall not be liable for any damages, direct or indirect, consequential or therewise, 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  Tin 7440-31-5 100.00  Tin 7440-31-5 100.00	irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date o ubstance, if any, is not below the threshold of regulatory concei olding compounds used by Microchip meet the UL94 V0 flamma	ternal design controls, al substance is NOT ar f this document, there in for any regulatory so ability standard for pla	supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.	and, to the be impurity con	est of Microchi ncentration of	p the chemical		Dope Silicon	7440-21-3 Total	100	
ppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These stimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  icrochip 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 icrochip 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 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  Tin 7440-31-5 100.00	irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date o ubstance, if any, is not below the threshold of regulatory concei loiding compounds used by Microchip meet the UL94 V0 flammattp://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ternal design controls, al substance is NOT ar f this document, there in for any regulatory so ability standard for pla- stics/	supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  Stics. You can access the UL iQTM family of databas	and, to the be impurity con es to obtain a	est of Microchi ncentration of n test report at	p the chemical		Dope Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
arranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in arranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual content provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual content provided in annual content provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual content provided in annual content provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual content provided in annual content provided in annual content provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual content provided in annual content provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual content provided in annual content provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual content provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual content provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual content provided in annual conte	irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date o ubstance, if any, is not below the threshold of regulatory concei- loiding compounds used by Microchip meet the UL94 V0 flamma ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pla he protective "tubes" in which the specific product is shipped a nd certain "reels" may be made from PVC plastic.  licrochip Technology Incorporated believes the information in the voices in their original packing materials is true and correct to t uarantee the completeness and accuracy of data in this form be	ternal design controls, al substance is NOT are finis document, there in for any regulatory subility standard for plastics/ re made from polyviny his form concerning such best of its knowleds cause it has been com	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  Stics. You can access the UL iQTM family of databased chloride (PVC) plastic. "Window envelopes" used to the state of the date listed in this form. Micropiled based on the ranges provided in Material Safe	and, to the be impurity con es to obtain a o hold the pace gy Incorporate chip Technolo ty Data Sheet	est of Microchi centration of a test report at cking slip on t ed's semicono ogy Incorporat s provided by	p the chemical he outer box luctor ed cannot raw material		Dope Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
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  Tin 7440-31-5 100.00  GS) or of this Certificate of Compliance for semiconductor products.	irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date o ubstance, if any, is not below the threshold of regulatory concei- loiding compounds used by Microchip meet the UL94 V0 flammattp://ul.com/global/eng/pages/offerings/industries/chemicals/pla he protective "tubes" in which the specific product is shipped a nd certain "reels" may be made from PVC plastic.  licrochip Technology Incorporated believes the information in the evices in their original packing materials is true and correct to to uarantee the completeness and accuracy of data in this form be uppliers. Supplier information is often protected from disclosura uppliers. Information is provided only as estimates of the average	ternal design controls, al substance is NOT ar f this document, there in for any regulatory so ability standard for pla- stics/ re made from polyviny his form concerning su- he best of its knowleds cause it has been come as trade secrets and je weight of these part	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  It is is is in the intention of the intention o	and, to the be impurity con es to obtain a o hold the pac gy Incorporate chip Technolo ty Data Sheet blocontract ass oxic metals co	est of Microchi ncentration of a test report at cking slip on t ed's semiconc ogy Incorporal s provided by semblers and	p the chemical he outer box luctor ed cannot raw material raw material		Dope Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
Total 100.00	irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date o ubstance, if any, is not below the threshold of regulatory concet loiding compounds used by Microchip meet the UL94 V0 flammat ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pla he protective "tubes" in which the specific product is shipped a nd certain "reels" may be made from PVC plastic.  Iicrochip Technology Incorporated believes the information in the evices in their original packing materials is true and correct to t uarantee the completeness and accuracy of data in this form be uppliers. Supplier information is often protected from disclosure uppliers. Information is provided only as estimates of the averag stimates do not include trace levels of dopants, metals, and nor licrochip Technology Incorporated does not provide any warran arranties provided by Microchip Technology Incorporated and i	ternal design controls, all substance is NOT are if this document, there in for any regulatory subility standard for plassics/ re made from polyviny his form concerning such best of its knowledgeause it has been come as trade secrets and be weight of these partimental materials contaty, express or implied, ts subsidiaries are contained.	supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  It is is the control of the control	and, to the be impurity con es to obtain a o hold the pac gy Incorporate chip Technolo ty Data Sheet: ubcontract assoxic metals co I parts.	est of Microchi ncentration of a test report at cking slip on t ed's semicono ogy Incorporat s provided by semblers and omponents. The	pthe chemical the outer box luctor ed cannot rad material raw material nese	0.54	Dope Silicon  (mg) Total  Dope Gold	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	0.1
	irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  compliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic achnology Incorporated's knowledge and belief as of the date oubstance, if any, is not below the threshold of regulatory conceived of the co	ternal design controls, all substance is NOT are if this document, there in for any regulatory subility standard for plastics/ re made from polyviny has form concerning super best of its knowled, cause it has been come as trade secrets and pe weight of these partimetal materials containty, express or implied, its subsidiaries are corces.	supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  It is to stice. You can access the UL iQTM family of databased chloride (PVC) plastic. "Window envelopes" used to the list of	and, to the be a impurity con es to obtain a o hold the pace of th	est of Microchi centration of a test report at cking slip on t ed's semicono ogy Incorporat s provided by semblers and omponents. The exclusive, limit se are provide	p the chemical the outer box luctor ed cannot raw material raw material lese ed product d in uential or	0.54	Dope Silicon  (mg) Total  Dope 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	0.1

SO 20 SOIC 10:26 AM : 5/6/2014

AICROCHIP				nation Base A pper Alloy (C	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Produ Marking and/o Pkg. Labeling e3
Semiconductor Device Typ	e: OG 24 (Lead	SOIC (Wide Outline - 300mil) (K3 / KS)								•
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	462.27	(mg) Total	Mold Compound	% ot Total Weight	69.83
Silica, vitreous	60676-86-0	Mold Compound	59.356	392.933	593,555		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.277	28.314	42,771		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	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			Total		
Iron	7439-89-6	Lead Frame	0.634	4.194	6,336	178.48	(mg) Total	Lead Frame	% of Total Weight	26.96
Silver Zinc	7440-22-4	Lead Frame	0.514	3.400	5,136		Copper	7440-50-8	95.54	
	7440-66-6	Lead Frame		0.223	337 222		Iron	7439-89-6	2.35	
Phosphorous Silver	7723-14-0 7440-22-4	Lead Frame Die Attach	0.022	0.147 2.155	3,256		Silver Zinc	7440-22-4 7440-66-6	1.91 0.13	
Epoxy resin	Trade Secret	Die Attach	0.326	0.583	3,256 880		Zinc Phosphorous	7440-66-6 7723-14-0	0.13	
Metal oxide		Die Attach	0.000	0.563	132		Phosphorous	7723-14-0 Total		
Gamma-butyrolactone	Trade Secret 96-48-0	Die Attach	0.013	0.087	132	2.91	() T. (.)	Die Attach		0.44
Silicon	7440-21-3	Chip (Die)	2.010	13.306	20.100	2.91	(mg) Total		% of Total Weight	0.44
Gold	7440-21-3	Wire Bond	0.090	0.596	900		Silver	7440-22-4 Trade Secret	74 20	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.670	4.435	6,700		Epoxy resin Metal oxide	Trade Secret	3	
1111	7440-31-3				1,000,000				3	
		TOTAL S:	100 000							
	•	TOTALS: g Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro	100.000 oHS Recast Dir	662.000 rective) and w		13.31	Gamma-butyrolactone  Total (mg)	96-48-0 Total Chip (Die)	100.00 % of Total Weight	2.01
s semiconductor device and its homogenous materials comply ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance with the above EU Directives has been verified via interchamical substance is absent from the list above, the chemical	with EU Directive 2002	g Total Mass 2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rouse) supplier declarations, and /or analytical test data.	oHS Recast Dir	rective) and w	ith EU	13.31		Total	% of Total Weight	2.01
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  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 documen, is not below the threshold of regulatory concern for any regul	with EU Directive 2002 ernal design controls, s substance is NOT an nt, there is no credible atory scheme world-w	Total Mass 295/EC (RoHS Directive), EU Directive 2011/65/EU (Rouse) Supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device ar reason to believe that the unavoidable impurity concide.	oHS Recast Dir d, to the best entration of th	rective) and w of Microchip T e chemical su	ith EU		Total (mg)  Doped Silicon	Total 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 verified via inte chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this documer, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammato://ul.com/global/eng/pages/offerings/industries/chemicals/plast	with EU Directive 2002 ernal design controls, s substance is NOT an nt, there is no credible atory scheme world-w illity standard for plast ics/	Total Mass 295/EC (RoHS Directive), EU Directive 2011/65/EU (Rouse) Supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device ar reason to believe that the unavoidable impurity concide. Icics. You can access the UL iQTM family of databases	oHS Recast Did d, to the best entration of th	rective) and w of Microchip T e chemical su st report at	echnology bstance, if	0.60	Total (mg)	Total Chip (Die) 7440-21-3	% of Total Weight	2.01
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  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 documer, is not below the threshold of regulatory concern for any reguluting compounds used by Microchip meet the UL94 V0 flammat	with EU Directive 2002 ernal design controls, s substance is NOT an nt, there is no credible atory scheme world-w illity standard for plast ics/	Total Mass 295/EC (RoHS Directive), EU Directive 2011/65/EU (Rouse) Supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device ar reason to believe that the unavoidable impurity concide. Icics. You can access the UL iQTM family of databases	oHS Recast Did d, to the best entration of th	rective) and w of Microchip T e chemical su st report at	echnology bstance, if		Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight  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 interchemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this documer, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammat oct/ul.com/global/eng/pages/offerings/industries/chemicals/plast or protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  prochip Technology Incorporated believes the information in this ir original packing materials is true and correct to the best of its inpleteness and accuracy of data in this form because it has beoplier information is often protected from disclosure as trade somation is provided only as estimates of the average weight of lude trace levels of dopants, metals, and non-metal materials collected.	with EU Directive 2002  rnal design controls, substance is NOT annt, there is no credible atory scheme world-willity standard for plastics/ e made from polyvinyles form concerning substanding substanding and belief en compiled based on crets and some informathese parts and the avontained within silicon	Total Mass 2795/EC (RoHS Directive), EU Directive 2011/65/EU (Rouse) 2895/EC (RoHS Directive), EU Directive 2011/65/EU (Rouse) 2995/EC (RohS Directive), EU Directive 2011/65/EU (Rouse) 2995/	oHS Recast Did d, to the best entration of th to obtain a te nold the packi lincorporated's oylded by raw semblers and omponents. T	of Microchip Te chemical su st report at ng slip on the s semiconduct ted cannot gue material supp raw material supp raw material supp	echnology bstance, if outer box tor devices in arantee the oliers. suppliers. s do not		Total (mg)  Doped Silicon  (mg) Total  Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight  100  100.00  % of Total Weight  100  100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  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 document, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammato://ul.com/global/eng/pages/offerings/industries/chemicals/plast or protective "tubes" in which the specific product is shipped and a certain "reels" may be made from PVC plastic.  Prochip Technology Incorporated believes the information in this ir original packing materials is true and correct to the best of its impleteness and accuracy of data in this form because it has been opplier information is often protected from disclosure as trade somation is provided only as estimates of the average weight of	with EU Directive 2002  rnal design controls, substance is NOT annot, there is no credible atory scheme world-willity standard for plastics/  e made from polyvinyl  s form concerning substance and some information of the second crets and some information these parts and the authority of the subsidiaries are controlled, subsidiaries are controlled.	Total Mass 2795/EC (RoHS Directive), EU Directive 2011/65/EU (Rouse) 295/EC (RoHS Directive), EU Directive 2011/65/EU (Rouse) 3 supplier declarations, and /or analytical test data. 3 intentional ingredient in the semiconductor device ar reason to believe that the unavoidable impurity concide. 3 ide. 3 ide. 3 ide. 3 ide. 4 ide. 5 ide. 5 ide. 6 ide. 6 ide. 7 ide. 7 ide. 8	oHS Recast Did d, to the best entration of the to obtain a te mold the packin lincorporated's ogy Incorporate ovided by raw semblers and omponents. T ation. The exc f sale. These a	of Microchip Technical su st report at mg slip on the s semiconducted cannot gua material supp raw material se hese estimate	rechnology bstance, if outer box tor devices in arantee the oliers. suppliers. s do not product a Microchip's		Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight  100  100.00  % of Total Weight  100  100.00	
propertive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via interchemical substance is absent from the list above, the chemical proprated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammats://ul.com/global/eng/pages/offerings/industries/chemicals/plaster protective "tubes" in which the specific product is shipped and I certain "reels" may be made from PVC plastic.  In certain "reels" may be made from PVC plastic.  In comparison of the protected from disclosure as trade separation is provided only as estimates of the average weight of function is provided only as estimates of the average weight of function to the protected from disclosure as trade separation is provided only as estimates of the average weight of function to the protected from disclosure as trade separation is provided only as estimates of the average weight of function to the protected from disclosure as trade separation is provided only as estimates of the average weight of function is provided only as estimates of the average weight of function is provided only as estimates of the average weight of functions.	with EU Directive 2002  rnal design controls, substance is NOT an ant, there is no credible atory scheme world-willity standard for plastics/  e made from polyvinyles form concerning subside and belief an compiled based on crets and some informatics and the about an antained within silicon as controls, express or implied, very subsidiaries are controls to Material Content E	Total Mass 2795/EC (RoHS Directive), EU Directive 2011/65/EU (Rosupplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device ar reason to believe that the unavoidable impurity concide.  Idea of the data is the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to stances restricted by RoHS in Microchip Technology, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets provided in may not have been provided by subcontract are reage weight of anticipated significant toxic metals of devices (silicon IC) in the finished parts.  With respect to the information provided in this declaration of the provided in Microchip's standard terms and conditions of Declarations and shall not be liable for any damages,	d, to the best entration of the to obtain a te nold the packing lincorporated by raw semblers and omponents. Tation. The exc f sale. These addirect or indirect or	of Microchip Technical su st report at ing slip on the s semiconducted cannot guar material suppraw material shese estimate dusive, limited are provided in	rechnology bstance, if outer box tor devices in arantee the oliers. suppliers. s do not product a Microchip's otial or	0.60	Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (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	% of Total Weight  100  100.00  % of Total Weight  100  100.00  % of Total Weight  100.00	0.09

OG 24 SOIC 10:26 AM : 5/6/2014

Semiconductor Device Typ	e: SO & Ol 28 (Lead)	SOIC (Wide Outline - 300mil) (N3 / NN)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	1 1	"Contained In"	% Total	1	1					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	614.78	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	522.562	678,300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	37.655	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	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 0.067	131 87		Iron	7439-89-6	2.35	
Phosphorous Silver (Ag)	7723-14-0 7440-22-4	Lead Frame Die Attach	0.009	4.334	5.625		Silver Zinc	7440-22-4 7440-66-6	1.91 0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.565	0.809	1,050		Phosphorous	7723-14-0	0.13	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.433	563		Filospilolous	7723-14-0 Total	100.00	
Modified Amine	827-43-0	Die Attach	0.036	0.433	263	5.78	() <b>T</b>	Die Attach	% of Total Weight	0.75
Silicon						5.78	(mg) Total			0.75
Gold	7440-21-3 7440-57-5	Chip (Die) Wire Bond	7.500 0.200	57.780 1.541	75,000 2.000		Silver (Ag) Modified Epoxy Resin	7440-22-4 13561-08-5	75 14	
Tin		on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	9.630	12,500	D:	glycidylether of bisphenol-F	54208-63-8	8	
1111	7440-31-3 Plating 6			770.400	1.000.000	Di	Modified Amine	827-43-0	4	
	0.7704 g To with EU Directive 2002/95/E		100.000 HS Recast Dir		,,	57.78	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	7.5
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Diance with the above EU Directives has been verified via intended in the hemical substance is absent from the list above, the chemical porated's knowledge and belief as of the date of this document.	with EU Directive 2002/95/E rnal design controls, suppli substance is NOT an inten it, there is no credible reas	otal Mass EC (RoHS Directive), EU Directive 2011/65/EU (Ro lier declarations, and /or analytical test data. ttional ingredient in the semiconductor device an	HS Recast Dir	rective) and wi	th EU	57.78		Total	100.00	7.5
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  liance with the above EU Directives has been verified via integemical substance is absent from the list above, the chemical borated's knowledge and belief as of the date of this documents not below the threshold of regulatory concern for any reguling compounds used by Microchip meet the UL94 V0 flammabul.com/global/eng/pages/offerings/industries/chemicals/plast	with EU Directive 2002/95/E rnal design controls, suppli substance is NOT an intent it, there is no credible rease atory scheme world-wide. ility standard for plastics. Y ics/	otal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (Ro  lier declarations, and /or analytical test data.  Itional ingredient in the semiconductor device an on to believe that the unavoidable impurity conce	HS Recast Dir d, to the best entration of th to obtain a te	rective) and wi of Microchip T e chemical sul st report at	echnology bstance, if	57.78 1.54	Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.5
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 interplant of the district substance is absent from the list above, the chemical rporated's knowledge and belief as of the date of this documer is not below the threshold of regulatory concern for any regul ling 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.	with EU Directive 2002/95/E rnal design controls, suppli substance is NOT an intent it, there is no credible rease atory scheme world-wide. ility standard for plastics. Y ics/	otal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (Ro  lier declarations, and /or analytical test data.  Itional ingredient in the semiconductor device an on to believe that the unavoidable impurity conce	HS Recast Dir d, to the best entration of th to obtain a te	rective) and wi of Microchip T e chemical sul st report at	echnology bstance, if		Total (mg)  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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via interchemical substance is absent from the list above, the chemical rporated's knowledge and belief as of the date of this documer is not below the threshold of regulatory concern for any regul ling 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	with EU Directive 2002/95/E rnal design controls, suppli substance is NOT an intent it, there is no credible reast atory scheme world-wide. ility standard for plastics. Y ics/ made from polyvinyl chlor form concerning substanc knowledge and belief, as o n compiled based on the ra crets and some informatior these parts and the average	otal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (Ro  EC (RoHS Directive), EU Directive 2011/65/EU (Ro  Ilier declarations, and /or analytical test data.  Itional ingredient in the semiconductor device an on to believe that the unavoidable impurity concerved on the control of the data listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this form the control of the date listed in this form the control of the date listed in this form the control of the date listed in this form the control of the date listed in this form the control of the date listed in this form the control of the date listed in this form the control of the date listed in this form the control of the date listed in this form the control of the date listed in this form the control of the date listed in this form the control of the date listed in this form the control of the date listed in the control of the	d, to the best entration of the to obtain a temporal the packling linear properties of the packling linear properties of the packling linear properties of the packling linear properties and the packling linear properties linear propertie	of Microchip T e chemical sui st report at ng slip on the s semiconducted cannot gue r material supp r aw material supp	echnology bstance, if outer box tor devices in arantee the bliers.		Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via interplance with the above EU Directives has been verified via interplance is absent from the list above, the chemical riporated's knowledge and belief as of the date of this documer is not below the threshold of regulatory concern for any regul ling 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.  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 olier information is often protected from disclosure as trade se mation is provided only as estimates of the average weight of	with EU Directive 2002/95/E rnal design controls, suppli substance is NOT an intent it, there is no credible reast atory scheme world-wide. ility standard for plastics. Y ics/ made from polyvinyl chlor form concerning substanc knowledge and belief, as o n compiled based on the ra crets and some informatior these parts and the average intained within silicon device , express or implied, with re	otal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (Ro  lier declarations, and /or analytical test data.  Itional ingredient in the semiconductor device an on to believe that the unavoidable impurity concervous can access the UL iQTM family of databases aride (PVC) plastic. "Window envelopes" used to be sees restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technology of the date listed in this date listed in th	d, to the best entration of the to obtain a termold the packing incorporated by raw semblers and omponents. To ation. The exception of the took of the	of Microchip Techemical suits report at mg slip on the semiconducted cannot gue material suppraw materials hese estimate:	rechnology bstance, if couter box cor devices in arantee the sliers. Suppliers. It is do not product		Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via interplance with the above EU Directives has been verified via interplance with the above EU Directives has been verified via interplance is absent from the list above, the chemical reporated's knowledge and belief as of the date of this documer is not below the threshold of regulatory concern for any regul ling compounds used by Microchip meet the UL94 V0 flammab //ul.com/global/eng/pages/offerings/industries/chemicals/plast //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.  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 begiler information is often protected from disclosure as trade semation is provided only as estimates of the average weight of det trace levels of dopants, metals, and non-metal materials conchip Technology Incorporated does not provide any warranty anties provided by Microchip Technology Incorporated and its	with EU Directive 2002/95/E rnal design controls, suppli substance is NOT an intent it, there is no credible rease atory scheme world-wide. illity standard for plastics. Y ics/ made from polyvinyl chlor is form concerning substanc knowledge and belief, as o n compiled based on the ra crets and some information these parts and the average intained within silicon device , express or implied, with re subsidiaries are contained s to Material Content Declar	paral Mass  EC (RoHS Directive), EU Directive 2011/65/EU (Ro  dier declarations, and /or analytical test data.  ational ingredient in the semiconductor device an on to believe that the unavoidable impurity conce  You can access the UL iQTM family of databases  ride (PVC) plastic. "Window envelopes" used to h  ces restricted by RoHS in Microchip Technology of the date listed in this form. Microchip Technology of the date listed in Material Safety Data Sheets pr n may not have been provided by subcontract as eweight of anticipated significant toxic metals of ces (silicon IC) in the finished parts.  espect to the information provided in this declarat in Microchip's standard terms and conditions of rations and shall not be liable for any damages, o	d, to the best entration of the to obtain a termold the packing incorporated by raw semblers and omponents. The action. The excipate of sale. These addirect or indirect or in	of Microchip Technical sulparts of the chemical sulparts of the semiconduct ted cannot guar material suppraw	dechnology betance, if souter box stor devices in arantee the eliers. Suppliers, is do not product in Microchip's stial or	1.54	Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (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 100 100.00	0.2

SO SI 28 SOIC 10:27 AM: 5/6/2014

MICROCHIP  Semiconductor Device	Type: SM, S2AE	08 (Lead) SOIC (208 mil) (C3/CD)		nation 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	% Total Weight	mg/part	ppm	99.27	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	84.381	678.300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.888	6.080	48.878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	4.888	6.080	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	2.432	19.551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.298	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	12,479	100.314		Carbon Black	Total	100.00	J
Iron	7439-89-6	Lead Frame	0.247	0.307	2,468	13.06	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.249	2,000	13.00	Copper	7440-50-8	95.54	10.5
Zinc	7440-22-4	Lead Frame	0.200	0.249	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.013	0.010	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	0.700	1.050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.070	563		Filospilorous	Total		]
Modified Amine	827-43-0	Die Attach	0.036	0.070	263	2.00	() T-(-1			0.75
						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	
Doped Gold	7440-57-5	Wire Bond	0.200	0.249	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	1.555	12,500	Di	glycidylether of bisphenol-F		8	
			400 000							
	0.4044	TOTALS:	100.000	124.400	1,000,000		Modified Amine	827-43-0	4	
nis semiconductor device and its homogenous materials co		g Total Mass			, ,	9.33	Modified Amine (mg) Total	827-43-0 Total Chip (Die)		7.5
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the che echnology Incorporated's knowledge and belief as of the da	mply with EU Directive 20 ia internal design control mical substance is NOT a te of this document, ther	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable	RoHS Recas	st Directive) a	nd with EU	9.33		Total	100.00	7.5
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified v a chemical substance is absent from the list above, the che	mply with EU Directive 20 ia internal design control mical substance is NOT a te of this document, ther allatory concern for any re	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide.	RoHS Recas and, to the be impurity co	st Directive) and the content of Microcontration of the content of	nd with EU chip of the	9.33	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.5
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the che echnology Incorporated's knowledge and belief as of the da nemical substance, if any, is not below the threshold of reguo olding compounds used by Microchip meet the UL94 VO fla	mply with EU Directive 20 ia internal design control mical substance is NOT a te of this document, ther ulatory concern for any re mmability standard for pl /plastics/	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable egulatory scheme world-wide. astics. You can access the UL iQTM family of database	RoHS Recas and, to the b e impurity co	st Directive) and the state of Microconcentration of a test report	nd with EU chip of the		(mg) Total  Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % 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 via a chemical substance is absent from the list above, the che schnology Incorporated's knowledge and belief as of the da nemical substance, if any, is not below the threshold of reguon olding compounds used by Microchip meet the UL94 VO flat tp://ul.com/global/eng/pages/offerings/industries/chemicals ne protective "tubes" in which the specific product is shipp	mply with EU Directive 20 a internal design control mical substance is NOT a te of this document, ther alatory concern for any re mmability standard for pl /plastics/ ed are made from polyvin in this form concerning s to the best of its knowled n because it has been co m disclosure as trade se tes of the average weigh	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable equilatory scheme world-wide. astics. You can access the UL iQTM family of databasely chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technolo dage and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safecrets and some information may not have been provide tof these parts and the average weight of anticipated	and, to the be impurity co es to obtain o hold the pa gy Incorpora chip Techno ty Data Shee ded by subcol significant t	pest of Microconcentration of a test report acking slip or ated's semico elogy Incorporates provided bontract assem toxic metals of contract assem	chip of the at nthe outer nductor rated cannot by raw		(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	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  compliance with the above EU Directives has been verified via chemical substance is absent from the list above, the che  chnology Incorporated's knowledge and belief as of the da  nemical substance, if any, is not below the threshold of regulo  olding compounds used by Microchip meet the UL94 V0 flat  tp://ul.com/global/eng/pages/offerings/industries/chemicals  ne protective "tubes" in which the specific product is shipp  ox and certain "reels" may be made from PVC plastic.  icrochip Technology Incorporated believes the information  evices in their original packing materials is true and correct  uarantee the completeness and accuracy of data in this for  aterial suppliers. Supplier information is often protected frow  material suppliers. Information is provided only as estime.	mply with EU Directive 20 a internal design control mical substance is NOT a te of this document, ther alatory concern for any re mmability standard for pla /plastics/ ed are made from polyvin in this form concerning s to the best of its knowled in because it has been co in disclosure as trade se tes of the average weigh is, and non-metal materia rrranty, express or implied orrated and its subsidiaria	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable gulatory scheme world-wide. astics. You can access the UL iQTM family of databas uyl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technolo dge and belief, as of the date listed in this form. Micro mpilled based on the ranges provided in Material Safe crets and some information may not have been provi t of these parts and the average weight of anticipated lis contained within silicon devices (silicon IC) in the fi	and, to the be impurity conses to obtain to hold the party Data Shee ded by subcol significant tinished parts laration. The	pest of Microconcentration of a test report acking slip or atted's semicology Incorpor bets provided be pontract assentoxic metals of s.	at at anductor and cannot by raw ablers and components.		(mg) Total  Doped Silicon  (mg) Total  Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	100.00 % of Total Weight 100 100.00 % of Total Weight	0.2
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  compliance with the above EU Directives has been verified via chemical substance is absent from the list above, the che schnology Incorporated's knowledge and belief as of the date included incompounds used by Microchip meet the UL94 V0 flatp://ul.com/global/eng/pages/offerings/industries/chemicals per protective "tubes" in which the specific product is shipp ox and certain "reels" may be made from PVC plastic.  Sicrochip Technology Incorporated believes the information evices in their original packing materials is true and correct uarantee the completeness and accuracy of data in this form atterial suppliers. Supplier information is provided only as estimates estimates do not include trace levels of dopants, meta icrochip Technology Incorporated does not provide any wa oduct warranties provided by Microchip Technology Incorporated does not provide any wa oduct warranties provided by Microchip Technology Incorporated does not provide any wa oduct warranties provided by Microchip Technology Incorporated does not provide any wa oduct warranties provided by Microchip Technology Incorporated does not provide any wa oduct warranties provided by Microchip Technology Incorporated does not provide any wa oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated does not provide any was oduct warranties provided by Microchip Technology Incorporated do	mply with EU Directive 20 ia internal design control mical substance is NOT a te of this document, ther ulatory concern for any re immability standard for pl. //plastics/ ed are made from polyvin in this form concerning s to the best of its knowler in because it has been co im disclosure as trade se tes of the average weigh ls, and non-metal materia rranty, express or implier oorated and its subsidiarie it invoices. anges to Material Conten users' reliance on the in	g Total Mass D02/95/EC (RoHS Directive), EU Directive 2011/65/EU ( s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable egulatory scheme world-wide. astics. You can access the UL iQTM family of databas anyl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technolo dge and belief, as of the date listed in this form. Micro mpiled based on the ranges provided in Material Safe crets and some information may not have been provi- t of these parts and the average weight of anticipated als contained within silicon devices (silicon IC) in the fi- dt, with respect to the information provided in this dec- es are contained in Microchip's standard terms and cut	and, to the be impurity cones to obtain to hold the particular and the	pest of Microconcentration of a test report acking slip or atted's semico alogy Incorporets provided bontract assemboxic metals of second acking slip.	chip of the at n the outer nductor rated cannot by raw nblers and components. mited re provided	0.25	(mg) Total  Doped Silicon  (mg) Total  Doped 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	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2

SM S2AE 08 SOIC 10:27 AM : 5/6/2014

MICROCHIP  Semiconductor Device Type	: S2AF 08 (Lead	SOIJ/SOIC .208in (4B)		nation Base oper Alloy (0	-		•	ogeneous Materials: g. pc boards, display:	s)	JEDEC 97 Product Marking 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	7440-05-03	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			Total	100.00	
		TOTALS:	100.000	135.700	1,000,000	7.34	Total (mg)	Chip (Die)	% of Total Weight	5.41
	0 1357 a	Total Mass			1					
s semiconductor device and its homogenous materials comply to	with FU Directive 2002		U (RoHS Recas	st Directive) a	and with FU		Doped Silicon	7440-21-3 <b>Total</b>	100 <b>100.00</b>	
is semiconductor device and its homogenous materials comply ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via inte		/95/EC (RoHS Directive), EU Directive 2011/65/N		st Directive) a	and with EU	0.20	Doped Silicon (mg) Total			0.15
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	rnal design controls, s substance is NOT an this document, there is	/95/EC (RoHS Directive), EU Directive 2011/65/li supplier declarations, and /or analytical test dat intentional ingredient in the semiconductor dev s no credible reason to believe that the unavoid	a. ice and, to the I	best of Micro	chip	0.20	·	Total	100.00	0.15
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance with the above EU Directives has been verified via inte chemical substance is absent from the list above, the chemical chnology incorporated's knowledge and belief as of the date of t	rnal design controls, s substance is NOT an this document, there is concern for any regu ility standard for plast	/95/EC (RoHS Directive), EU Directive 2011/65/l supplier declarations, and /or analytical test dat intentional ingredient in the semiconductor dev s no credible reason to believe that the unavoid latory scheme world-wide.	a. ice and, to the I able impurity co	best of Micro	chip of the	0.20	(mg) Total	Total Wire Bond	% of Total Weight	0.15
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance with the above EU Directives has been verified via inte chemical substance is absent from the list above, the chemical chnology incorporated's knowledge and belief as of the date of temical substance, if any, is not below the threshold of regulatory lding compounds used by Microchip meet the UL94 V0 flammab	rnal design controls, s substance is NOT an this document, there is a concern for any regu- ility standard for plast ics/	/95/EC (RoHS Directive), EU Directive 2011/65/la supplier declarations, and /or analytical test dat intentional ingredient in the semiconductor dev is no credible reason to believe that the unavoid latory scheme world-wide. ics. You can access the UL iQTM family of data	a. ice and, to the l able impurity co bases to obtain	best of Micro oncentration a test report	chip of the	0.20	(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.15
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance with the above EU Directives has been verified via inte chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of temical substance, if any, is not below the threshold of regulatory Iding compounds used by Microchip meet the UL94 V0 flammab p://ul.com/global/eng/pages/offerings/industries/chemicals/plast eprotective "tubes" in which the specific product is shipped are	rnal design controls, s substance is NOT an this document, there is a concern for any regu- ility standard for plast ics/ a made from polyvinyl- s form concerning sub- best of its knowledge ause it has been comp closure as trade secre t the average weight o	195/EC (RoHS Directive), EU Directive 2011/65/lc supplier declarations, and /or analytical test dat intentional ingredient in the semiconductor devision or credible reason to believe that the unavoid latory scheme world-wide.  ics. You can access the UL iQTM family of data chloride (PVC) plastic. "Window envelopes" us stances restricted by RoHS in Microchip Techniand belief, as of the date listed in this form. Milied based on the ranges provided in Material St ts and some information may not have been prit these parts and the average weight of anticipring the supplier of these parts and the average weight of anticipring the supplier in the supplier of these parts and the average weight of anticipring the supplier in the supplier in the supplier of anticipring the supplier of the supplier of anticipring the supplier of the supplier of anticipring the supplier of the supplier	a.  ice and, to the lable impurity co bases to obtain  ed to hold the p  ology Incorpore crochip Techno afety Data Sheo voided by subcited significant:	best of Micro oncentration a test report acking slip o ated's semico ology Incorpo ets provided ontract assei toxic metals	of the at at at at an other conductor contact cannot by raw mblers and		(mg) Total  Doped Gold	Wire Bond 7440-57-5 Total Plating on external	100.00 % of Total Weight 100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via interchemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of the smitcal substance, if any, is not below the threshold of regulatory liding compounds used by Microchip meet the UL94 V0 flammab pr://ul.com/global/eng/pages/offerings/industries/chemicals/plast ap protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.  Prochip Technology Incorporated believes the information in this prices in their original packing materials is true and correct to the arantee the completeness and accuracy of data in this form becauterial suppliers. Supplier information is often protected from dis vinaterial suppliers. Information is provided only as estimates of vinaterial suppliers. Information is provided only as estimates of vinaterial suppliers.	rnal design controls, s substance is NOT an this document, there is concern for any regu- ility standard for plast ics/ a made from polyvinyl s form concerning sub best of its knowledge ause it has been comp closure as trade secre the average weight o d non-metal materials , express or implied, w d and its subsidiaries	195/EC (RoHS Directive), EU Directive 2011/65/Insupplier declarations, and /or analytical test data intentional ingredient in the semiconductor devision or credible reason to believe that the unavoid latory scheme world-wide.  Icics. You can access the UL iQTM family of data chloride (PVC) plastic. "Window envelopes" us stances restricted by RoHS in Microchip Techniand belief, as of the date listed in this form. Milled based on the ranges provided in Material Stand some information may not have been profit these parts and the average weight of anticipa contained within silicon devices (silicon IC) in twith respect to the information provided in this vith respect to the vith vith respect to the vith respect to the vith respect to the vith	a.  ice and, to the lable impurity contains to obtain add to hold the pology Incorporacrochip Technolafety Data Shet wided by subcuted significant ne finished part declaration. The	best of Micro oncentration  a test report acking slip of ated's semice ology Incorporates provided ontract asset toxic metals s.	or the outer onductor or the dannot by raw mblers and components.		(mg) Total  Doped Gold  (mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)(PPF)	100.00 % of Total Weight 100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via interchemical substance is absent from the list above, the chemical chinology Incorporated's knowledge and belief as of the date of the substance, if any, is not below the threshold of regulatory ding compounds used by Microchip meet the UL94 V0 flammab oct/ul.com/global/eng/pages/offerings/industries/chemicals/plast or protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information in this tices in their original packing materials is true and correct to the trantee the completeness and accuracy of data in this form because the information is often protected from dismaterial suppliers. Supplier information is often protected from dismaterial suppliers. Information is provided only as estimates of use estimates do not include trace levels of dopants, metals, and crochip Technology Incorporated does not provide any warranty duct warranties provided by Microchip Technology Incorporated does not provide any warranty duct warranties provided by Microchip Technology Incorporated	rnal design controls, s substance is NOT an this document, there is a concern for any reguility standard for plast ics/ e made from polyvinyl standard for made from polyvinyl standard for made from polyvinyl standard for made from polyvinyl standard from polyvinyl standard from concerning substandard from con	ps/EC (RoHS Directive), EU Directive 2011/65/licupplier declarations, and /or analytical test data intentional ingredient in the semiconductor devision credible reason to believe that the unavoid latory scheme world-wide.  ics. You can access the UL iQTM family of data chloride (PVC) plastic. "Window envelopes" us stances restricted by RoHS in Microchip Techn and belief, as of the date listed in this form. Millied based on the ranges provided in Material stand some information may not have been prit these parts and the average weight of anticipational contained within silicon devices (silicon IC) in the virth respect to the information provided in this care contained in Microchip's standard terms an electarations and shall not be liable for any damate in the contained and shall not be liable for any damated.	a.  ice and, to the lable impurity combases to obtain and to hold the pology Incorporatorchip Technorately Data Sheovided by subcuted significant the finished part declaration. The disconditions of ages, direct or in	best of Micro oncentration a test report acking slip o ated's semico logy Incorpo ets provided ontract asser toxic metals s. e exclusive, li sale. These	chip of the  at at  on the outer  conductor orated cannot by raw mblers and components.		(mg) Total  Doped Gold  (mg) Total  Nickel	Total Wire Bond 7440-57-5 Total Plating on external leads (pins)(PPF)	100.00 % of Total Weight 100 100.00 % of Total Weight 94.50	

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MICROCHIP  Semiconductor Device	Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3		
		"Contained In"	% Total			97.68	(mg) Total	Mold Compound	% ot Total Weight	71.98
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	01.00		· ·		
Silica, vitreous	60676-86-0	Mold Compound	61.183	83.025	611,830		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin Phenolic Resin	Trade Secret	Mold Compound  Mold Compound	4.409 4.409	5.983 5.983	44,088 44,088		Epoxy Resin Phenolic Resin	Trade Secret	6.13 6.13	
Epoxy, Cresol Novolac	Trade Secret 29690-82-2	Mold Compound  Mold Compound	1.764	2.393	17.635		Epoxy, Cresol Novolac	Trade Secret 29690-82-2	6.13 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		Calboli Black	Total		
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	31.07	Copper	7440-50-8	95.54	23.34
Zinc	7440-22-4	Lead Frame	0.445	0.040	292		Iron	7440-50-8	2.35	
Phosphorous	7723-14-0	Lead Frame	0.029	0.040	193		Silver	7439-89-6	1.91	
Synthetic Rubber	308079-85-8	Die Attach	0.068	0.020	680		Zinc	7440-66-6	0.13	
Silica, vitreous	60676-86-0	Die Attach	0.060	0.032	595		Phosphorous	7723-14-0	0.08	
Solid Epoxy Resin	Trade Secret	Die Attach	0.021	0.029	213		1 Hospitorous	Total		
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	0.20	Synthetic Rubber	308079-85-8	40.00	<b>U</b>
Doped Gold	7440-57-5	Wire Bond	0.120	0.163	1,200		Silica, vitreous	60676-86-0	35.00	
			0.880	1.194	8.800		Solid Epoxy Resin	Trade Secret	12.50	
lin	7440-31-5									
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			1.000.000				12.50	
semiconductor device and its homogenous materials of ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	0.1357 comply with EU Directive 20	g Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Re	100.000	135.700	1,000,000 with EU	4.76	Phenol Resin (mg) Total	Trade Secret Total Chip (Die)	% of Total Weight	3.51
is semiconductor device and its homogenous materials cective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance with the above EU Directives has been verified	0.1357 comply with EU Directive 20 via internal design controls	TOTALS:  g Total Mass  102/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ros, supplier declarations, and /or analytical test data.	100.000 oHS Recast D	135.700 Directive) and	with EU	4.76	Phenol Resin	Trade Secret Total	100.00 % of Total Weight	3.51
s semiconductor device and its homogenous materials of citive 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 clandogy Incorporated's knowledge and belief as of the mical substance, if any, is not below the threshold of redding compounds used by Microchip meet the UL94 V0 fi	0.1357 comply with EU Directive 20 via internal design controls hemical substance is NOT a date of this document, there gulatory concern for any re lammability standard for pla	g Total Mass  102/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ros, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable ingulatory scheme world-wide.	100.000 oHS Recast E	135.700 Directive) and st of Microchip entration of the street of the st	with EU	4.76 0.16	Phenol Resin (mg) Total	Trade Secret Total Chip (Die) 7440-21-3	100.00 % of Total Weight	3.51
Tin  is semiconductor device and its homogenous materials of ective 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 clothnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of resulting compounds used by Microchip meet the UL94 V0 ftp://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship x and certain "reels" may be made from PVC plastic.	0.1357 comply with EU Directive 20 via internal design controls hemical substance is NOT a date of this document, there gulatory concern for any re lammability standard for pla als/plastics/	g Total Mass  102/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ros, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable in gulatory scheme world-wide.  103/103/103/103/103/103/103/103/103/103/	100.000  oHS Recast E  nd, to the bes impurity conc	135.700  Directive) and st of Microchip entration of the est report at	with EU		Phenol Resin  (mg) Total  Doped Silicon	Trade Secret Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
is semiconductor device and its homogenous materials of ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive), impliance with the above EU Directives has been verified chemical substance is absent from the list above, the claim of the compounds of the compounds used by Microchip meet the UL94 Voff poi/lul.com/global/eng/pages/offerings/industries/chemical eprotective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the information in their original packing materials is true and correarantee the completeness and accuracy of data in this for terial suppliers. Supplier information is often protected feterial suppliers. Information is provided only as estimate	0.1357 comply with EU Directive 20 via internal design controls hemical substance is NOT a date of this document, there gulatory concern for any re lammability standard for pla als/plastics/ oped are made from polyvin on in this form concerning s ct to the best of its knowled from disclosure as trade see is of the average weight of t	g Total Mass  102/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ros, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable ingulatory scheme world-wide.  103. astics. You can access the UL iQTM family of databases and the variable in the control of th	nd, to the besimpurity concists to obtain a thold the pacing Technolog Data Sheets d by subconticant toxic metas.	135.700 Directive) and st of Microchip entration of the streport at sing slip on the d's semicondid by ract assemble	with EU  he  e outer  uctor d cannot raw ers and raw		Phenol Resin  (mg) Total  Doped Silicon  (mg) Total	Trade Secret Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	
is semiconductor device and its homogenous materials of ective 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 clohnology Incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of repliquing compounds used by Microchip meet the UL94 V0 fip://ul.com/global/eng/pages/offerings/industries/chemicale protective "tubes" in which the specific product is ship	0.1357 comply with EU Directive 20 via internal design controls hemical substance is NOT a date of this document, there gulatory concern for any re lammability standard for pla als/plastics/ oped are made from polyvin on in this form concerning s ct to the best of its knowled orm because it has been con rom disclosure as trade see so of the average weight of it tals, and non-metal materia varranty, express or implied a and its subsidiaries are co	g Total Mass  102/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ros, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable ingulatory scheme world-wide.  10 astics. You can access the UL iQTM family of databases and intentional ingredients. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technology (and belief, as of the date listed in this form. Microchippiled based on the ranges provided in Material Safety crets and some information may not have been provide these parts and the average weight of anticipated significs contained within silicon devices (silicon IC) in the final, with respect to the information provided in this declar.	nd, to the besimpurity concists to obtain a thold the packing Technology Data Sheets d by subconticant toxic mished parts.	135.700 Directive) and st of Microchip entration of the est report at king slip on the d's semiconday Incorporate provided by react assemble etals componicularity, limite etals componicularity in the etals componicularity and semicondictive, limite etals componicularity and semicondictive etals	with EU  one outer  uctor d cannot raw eers and raw lents.		Phenol Resin  (mg) Total  Doped Silicon  (mg) Total	Trade Secret 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	
is semiconductor device and its homogenous materials of ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive), impliance with the above EU Directives has been verified chemical substance is absent from the list above, the clandogy Incorporated's knowledge and belief as of the remical substance, if any, is not below the threshold of remical substance, if any, is not below the threshold of Po://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship x and certain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the information vices in their original packing materials is true and correspondence the completeness and accuracy of data in this forterial suppliers. Supplier information is often protected terial suppliers. Information is provided only as estimates do not include trace levels of dopants, meterochip Technology Incorporated does not provide any wranties provided by Microchip Technology Incorporated	0.1357 comply with EU Directive 20 via internal design controls hemical substance is NOT a date of this document, ther gulatory concern for any re lammability standard for pla als/plastics/ opped are made from polyvin on in this form concerning s ct to the best of its knowled orm because it has been con from disclosure as trade set is of the average weight of t tals, and non-metal materia varranty, express or implied I and its subsidiaries are co invoices. changes to Material Conten he users' reliance on the in	g Total Mass  102/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ros, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable ingulatory scheme world-wide.  10 astics. You can access the UL iQTM family of databases and the list of the date listed in this form. Microchip Technology (and belief, as of the date listed in this form. Microchip led based on the ranges provided in Material Safety crets and some information may not have been provide these parts and the average weight of anticipated signific scontained within silicon devices (silicon IC) in the finity, with respect to the information provided in this declar intained in Microchip's standard terms and conditions of the Declarations and shall not be liable for any damages,	nd, to the besimpurity concists to obtain a thought the pack of th	135.700 Directive) and st of Microchip entration of ti est report at king slip on the d's semiconday Incorporate provided by react assemble etals componente etals	with EU  he  conter  uctor  do cannot  raw  ers and raw  lents.  ad product  in	0.16	Phenol Resin  (mg) Total  Doped Silicon  (mg) Total  Doped Gold	Trade Secret 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	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00 100.00	0.12

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Semiconductor Device Type: CB and NB and TT 03 (Lead) SD7-23 (Cs / CV / M7)   Sub-Component   Weight   Meight	0.87	(mg) Total  Silica, vitreous Epoxy Resin Phenolic Resin Epoxy, Cresol Novolac Carbon Black  (mg) Total Copper Iron Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resin	13561-08-5 54208-63-8	% of Total Weight 95.54 2.35 1.91 0.13 0.08	e3 79.8 10.5
Basic Substance	0.87	Silica, vitreous Epoxy Resin Phenolic Resin Epoxy. Cresol Novolac Carbon Black  (mg) Total Copper Iron Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resin Iglycidylether of bisphenol-F	60676-86-0 Trade Secret Trade Secret Trade Secret 29690-82-2 1333-86-4 Total Lead Frame 7440-50-8 7439-89-6 7440-22-4 7440-66-6 7723-14-0 Total Die Attach )) 7440-22-4 13561-08-5 54208-63-8	85.00 6.13 6.13 2.45 0.30 100.00 % of Total Weight 95.54 2.35 1.91 0.13 0.08 100.00 % of Total Weight	10.5
Silica, vitreous   60676-86-0   Mold Compound   67.830   5.630   678,300	0.06	Epoxy Resin Phenolic Resin Epoxy, Cresol Novolac Carbon Black  (mg) Total Copper Iron Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resin Iglycidylether of bisphenol-F	Trade Secret Trade Secret Trade Secret 29690-82-2 1333-86-4 Total Lead Frame 7440-50-8 7439-89-6 7440-22-4 7440-66-6 7723-14-0 Total Die Attach )) 7440-22-4 13561-08-5 54208-63-8	6.13 6.13 2.45 0.30 100.00 % of Total Weight 95.54 2.35 1.91 0.13 0.08 100.00 % of Total Weight 75	
Epoxy Resin (No bromine, No diantimony trioxide)	0.06	Epoxy Resin Phenolic Resin Epoxy, Cresol Novolac Carbon Black  (mg) Total Copper Iron Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resin Iglycidylether of bisphenol-F	Trade Secret Trade Secret Trade Secret 29690-82-2 1333-86-4 Total Lead Frame 7440-50-8 7439-89-6 7440-22-4 7440-66-6 7723-14-0 Total Die Attach )) 7440-22-4 13561-08-5 54208-63-8	6.13 6.13 2.45 0.30 100.00 % of Total Weight 95.54 2.35 1.91 0.13 0.08 100.00 % of Total Weight 75	
Phenolic Resin (No Br / CL SbC3, No diantimory trioxide)	0.06	Phenolic Resin Epoxy, Cresol Novolac Carbon Black  (mg) Total Copper Iron Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resin	Trade Secret 29690-82-2 1333-86-4 Total Lead Frame 7440-50-8 7439-89-6 77440-22-4 77440-66-6 7723-14-0 Die Attach ) 7440-22-4 13561-08-5 54208-63-8	6.13 2.45 0.30 100.00 % of Total Weight 95.54 2.35 1.91 0.13 0.08 100.00 % of Total Weight 75 14	
Epoxy, Cresol Novolac   29690-82-2   Mold Compound   1.955   0.162   19.551	0.06	Epoxy, Cresol Novolac Carbon Black  (mg) Total Copper Iron Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resolir	29690-82-2 1333-86-4 Total Lead Frame 7440-50-8 7439-89-6 7440-22-4 7440-66-6 7723-14-0 Total Die Attach ) 7440-22-4 13561-08-5 54208-63-8	0.30  100.00  % of Total Weight 95.54 2.35 1.91 0.13 0.08 100.00  % of Total Weight 75 14	
Carbon Black	0.06	(mg) Total  Copper Iron Silver Zinc Phosphorous  (mg) Total  Silver (Ag) Modified Epoxy Resir Iglycidylether of bisphenol-Fi	Total Lead Frame 7440-50-8 7439-89-6 7440-22-4 7440-66-6 7723-14-0 Die Attach ) 7440-22-4 13561-08-5 54208-63-8	0.30  100.00  % of Total Weight 95.54 2.35 1.91 0.13 0.08 100.00  % of Total Weight 75 14	
Fron   7439-89-6   Lead Frame   0.247   0.020   2.468   0.87	0.06	Copper Iron Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resin	Lead Frame 7440-50-8 7449-89-6 7440-22-4 7440-66-6 7723-14-0 Die Attach ) 7440-22-4 13561-08-5 54208-63-8	% of Total Weight 95.54 2.35 1.91 0.13 0.08 100.00 % of Total Weight 75 14	
Fron   7439-88-6   Lead Frame   0.247   0.020   2.468   0.87	0.06	Copper Iron Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resin	7440-50-8 7439-89-6 7440-22-4 7440-66-6 7723-14-0  Die Attach ) 7440-22-4 13561-08-5 54208-63-8	95.54 2.35 1.91 0.13 0.08 100.00 % of Total Weight 75 14	
Zinc 7440-66-6 Lead Frame 0.013 0.001 131 Phosphorous 7723-14-0 Lead Frame 0.009 0.001 87 Silver (Ag) 7740-22-4 Die Attach 0.563 0.047 5,625 Modified Epoxy Resin 13561-08-5 Die Attach 0.105 0.009 1,050 Diglycidylether of bisphenol-F 54208-63-8 Die Attach 0.056 0.005 563 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Silicon 7440-21-3 Chip (Die) 7.500 0.623 75,000 Gold 7440-57-5 Wire Bond 0.200 0.017 2,000 Tin 7440-31-5 Plating on external leads (pirs) - Matter Tin / annealed at 150°C for 1 hour 1.250 0.104 12,500  TOTALS: 100.000 8.300 1,000,000  0.0083 g Total Mass s 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 bettive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  10.62		Copper Iron Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resin	7439-89-6 77440-22-4 77440-66-6 7723-14-0 Die Attach ) 7440-22-4 13561-08-5 54208-63-8	95.54 2.35 1.91 0.13 0.08 100.00 % of Total Weight 75 14	0.75
Zinc   7440-66-6   Lead Frame   0.013   0.001   131		Iron Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resin	7439-89-6 77440-22-4 77440-66-6 7723-14-0 Die Attach ) 7440-22-4 13561-08-5 54208-63-8	2.35 1.91 0.13 0.08 100.00 % of Total Weight 75 14	0.75
Phosphorous 7723-14-0 Lead Frame 0.009 0.001 87 Sliver (Ag) 7440-22-4 Die Attach 0.563 0.047 5.625 Modified Epoxy Resin 13561-08-5 Die Attach 0.105 0.009 1.050 Digycidylether of bisphenol-F 54208-63-8 Die Attach 0.056 0.005 563 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Silicon 7440-21-3 Chip (Die) 7.500 0.623 75,000 Gold 7440-57-5 Wire Bond 0.200 0.017 2.000 Tin 7440-31-5 Plating on external leads (pins) - Matter Tin / annealed at 150°C for 1 hour 1.250 0.104 12,500  0.0083 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) and with EU citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  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 Technology reporated'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 //ul.com/global/eng/pages/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		Silver Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resir	7440-22-4 7440-66-6 7723-14-0 Total Die Attach ) 7440-22-4 13561-08-5 54208-63-8	1.91 0.13 0.08 100.00 % of Total Weight 75 14	0.75
Silver (Ag) 7440-22-4 Die Attach 0.563 0.047 5,625 Modified Epoxy Resin 13561-08-5 Die Attach 0.105 0.009 1,050 Diglyclighten of bisphenol-F 54208-63-8 Die Attach 0.056 0.005 563 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Modified Emotion 97-440-21-3 Chip (Die) 7.500 0.623 75,000 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.06 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.06 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.06 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.06 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.06 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.06 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.06 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.06 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263 0.006 Modified Emotion 97-400-21 Die Attach 0.026 0.002 263		Zinc Phosphorous  (mg) Total Silver (Ag) Modified Epoxy Resir	7440-66-6 7723-14-0 Total Die Attach ) 7440-22-4 1 13561-08-5 54208-63-8	0.13 0.08 100.00 % of Total Weight 75 14	0.75
Modified Epoxy Resin 13561-08-5 Die Attach 0.105 0.009 1,050 Diglycidylether of bisphenol-F 54208-63-8 Die Attach 0.056 0.005 563 Modified Amine 827-43-0 Die Attach 0.026 0.002 263 0.06 Silicon 7440-21-3 Chip (Die) 7.500 0.623 75,000 Gold 7440-57-5 Wire Bond 0.200 0.017 2,000 Tin 7440-31-5 Plating on external leads (pins) - Matter Tin / annealed at 150°C for 1 hour 1.250 0.004 12,500  O.0083 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) and with EU citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  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 Technology reportated'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 //ul.com/global/eng/pages/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		Phosphorous  (mg) Total  Silver (Ag)  Modified Epoxy Resir  iglycidylether of bisphenol-F	7723-14-0  Total  Die Attach  7440-22-4  13561-08-5  54208-63-8	0.08 100.00 % of Total Weight 75 14	0.75
Diglycidylether of bisphenol-F  54208-63-8  Modified Amine  827-43-0  Die Attach  0.026  0.005  Silicon  7440-21-3  Chip (Die)  7.500  Gold  7440-57-5  Wire Bond  0.200  Tin  7440-31-5  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour  TOTALS: 100.000  8.300  1,000,000  0.623  TOTALS: 100.000  0.623  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 citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  plainance 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 Technology reporated'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.  0.02  0.02  0.03  0.06  0.000  0.001  0.200  0.017  0.000  0.001  0.0000  0.000  0.000  0.000  0.000  0.000  0.000  0.000  0.000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.00000  0.00000  0.00000  0.00000  0.00000  0.000000		(mg) Total Silver (Ag) Modified Epoxy Resin	Total  Die Attach ) 7440-22-4 h 13561-08-5 = 54208-63-8	100.00 % of Total Weight 75 14	0.75
Modified Amine  827-43-0 Die Attach 0.026 0.002 263 0.06 Silicon 7440-21-3 Chip (Die) 7.500 0.623 75,000 Tin 7440-31-5 Plating on external leads (pins) - Mater Tin / annealed at 150°C for 1 hour 1.250 0.008 TOTALS: 100.000 8.300 1,000,000 0.621 TOTALS: 100.000 0.0083 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) and with EU citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Schemical 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 reporated'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.  10.02  10.02  10.06  10.0000  10.0000  10.0000  10.0000  10.0000  10.0000  10.0000  10.0000  10.0000  10.0000  10.00000  10.0		Silver (Ag) Modified Epoxy Resin	Die Attach ) 7440-22-4 h 13561-08-5 54208-63-8	% of Total Weight 75 14	0.75
Silicon 7440-21-3 Chip (Die) 7,500 0,623 75,000 Gold 7440-57-5 Wire Bond 0,200 0,017 2,000 Tin 7440-31-5 Plating on external leads (pins) - Matter Tin / annealed at 150°C for 1 hour 1,250 0,104 12,500  TOTALS: 100.000 8.300 1,000,000  0.0083 g Total Mass  TOTALS: 100.000 8.300 1,000,000  0.0083 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) and with EU citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  shemical 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 reportated'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.    O.02   O.02   O.017   O.000   O.017   O.000   O.017   O.000   O.0000   O.00000   O.000000   O.00000   O.00000   O.00000   O.00000   O.000000   O.00000   O.000000   O.000000   O.000000   O.000000   O.000000   O.0000000   O.000000   O.000000   O.0000000   O.0000000   O.0000000   O.00000000   O.000000000   O.000000000   O.0000000000		Silver (Ag) Modified Epoxy Resin	7440-22-4 n 13561-08-5 54208-63-8	75 14	
Gold Tin T7440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS: 100.000 8.300 1,000,000 0.0083 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) and with EU titive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /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 reporated'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.    0.62   1.00	Dig	Modified Epoxy Resin	13561-08-5 54208-63-8	14	0.10
Tin 7440-31-5 Ptating on external leads (pins) - Matter Tin / annealed at 150°C for 1 hour 1.250 0.104 12,500  TOTALS: 100.000 8.300 1,000,000  0.0083 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) and with EU citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /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 reporated'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.  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 //ul.com/global/eng/pages/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	Dig	iglycidylether of bisphenol-F	54208-63-8		i
D.0083 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) and with EU citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Diance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Schemical 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 reportated'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.  Diang 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.com/global/eng/pages/offerings/industries/chemicals/plastics/  D.02  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					i
0.0083 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) and with EU tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  0.62  oliance 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 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 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.com/global/eng/pages/offerings/industries/chemicals/plastics/  orotective "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		Wodined Amine		4	i
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 citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  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 Technology reporated'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.  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 //ul.com/global/eng/pages/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			Total	100.00	
//ul.com/global/eng/pages/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	L	Doped Silicon	7440-21-3 Total	100	
	0.02	(mg) Total	Wire Bond	% of Total Weight	0.2
		Doped Gold	7440-57-5	100	
rochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices leir 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 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 suppliers. In price test from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. In the average weight of anticipated significant toxic metals components. These estimates do not ude trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Tochip 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	0.10	(mg) Total	Total Plating on external leads (pins) - Matte Tin /	100.00	1.25
tations, sales order acknowledgement, and invoices.  Tochip 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	0.10	(ilig) rotal	annealed at 150°C for 1 hour	100.00	1.25
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) this Certificate of Compliance for semiconductor products.		Tin	7440-31-5	100.00	

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AICROCHIP  Semiconductor Device Type	v CT OT 0	E 4 N SOT 22. 447		nation Base /	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	E: Cland OI U	, ,								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	100.00	
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	7.22	Copper	7440-50-8	95.54	20.0
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		1 Hoopherodo	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	0.36	Metal oxide	Trade Secret	33	2.30
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 <b>100.000</b>	0.301 <b>14.900</b>	20,200 <b>1.000.000</b>		Glycol ethers	Trade Secret	25 9	
HANA / Material compilation		TOTALS: q Total Mass	100.000	14.900	1,000,000		Curing / Hardener	Trade Secret Total		
	with Ell Directive 2	002/05/EC (Balle Directive) EU Directive 2011/65/E	II /DaUC Dage	ant Directive)	nd with EII					
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		002/95/EC (RoHS Directive), EU Directive 2011/65/E s, supplier declarations, and /or analytical test data	•	ast Directive) a	nd with EU	0.47	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	3.17
etive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via into the mical 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 regulatoring compounds used by Microchip meet the UL94 V0 flammal	ernal design control I substance is NOT this document, ther y concern for any ro ility standard for pl	is, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi re is no credible reason to believe that the unavoida egulatory scheme world-wide.	a. ice and, to the able impurity c	best of Micro	chip of the	0.47	Doped Silicon	. , ,	100	3.17
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  upliance with the above EU Directives has been verified via interpretain the list above, the 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 regulator ling compounds used by Microchip meet the UL94 V0 flammals://ul.com/global/eng/pages/offerings/industries/chemicals/plasprotective "tubes" in which the specific product is shipped ar	ernal design control I substance is NOT this document, ther y concern for any ro ility standard for pl tics/	is, 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 datal	a. ice and, to the able impurity o	best of Micro concentration	chip of the at		,	7440-21-3 Total	100	
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inctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via into 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 regulator ding compounds used by Microchip meet the UL94 V0 flammal://lul.com/global/eng/pages/offerings/industries/chemicals/plas/protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information in thickes in their original packing materials is true and correct to the rantee the completeness and accuracy of data in this form be reial suppliers. Supplier information is often protected from dimaterial suppliers. Information is provided only as estimates as estimates do not include trace levels of dopants, metals, are rochip Technology Incorporated does not provide any warrant duct warranties provided by Microchip Technology Incorporated does not provide any warrant duct warranties provided by Microchip Technology Incorporated does not provide any warrant duct warranties provided by Microchip Technology Incorporated does not provide any warrant duct warranties provided by Microchip Technology Incorporated does not provide any warrant duct warranties provided by Microchip Technology Incorporated does not provide any warrant duct warranties provided by Microchip Technology Incorporated does not provide any warrant duct warranties provided by Microchip Technology Incorporated does not provide any warrant duct warranties provided by Microchip Technology Incorporated does not provide any warrant duct warranties provided by Microchip Technology Incorporated does not provided any warrant duct warranties provided by Microchip Technology Incorporated does not provided by Microchip Technology Incorporated does not provided by Microchip Technology Incorporated does not provided by Microchip Technology Incorporated does	ernal design control I substance is NOT this document, thet y concern for any r sility standard for pl tics/ e made from polyvin s form concerning t e best of its knowle ause it has been cc sclosure as trade se of the average weigh d non-metal materia y, express or implie d and its subsidiari sices. s to Material Conter s' reliance on the ir	is, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidage gulatory scheme world-wide.  I astics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Microphile dased on the ranges provided in Material Sucrets and some information may not have been provided in the provided in this form. With the contained within silicon devices (silicon IC) in the difference of the information provided in this difference are contained in Microchip's standard terms and the Declarations and shall not be liable for any dama	a.  ce and, to the able impurity of the able impuri	best of Micro concentration  n a test report  packing slip o  rated's semice  tology Incorpo  peets provided  contract assert  t toxic metals  rts.  ne exclusive, li  if sale. These a  indirect, cons	chip of the  at  n the outer enductor rated cannot by raw nblers and components. mited are provided equential or	0.11	Doped 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	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.74
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CT OT 5 SOT-23 10:28 AM : 5/6/2014

CROCHIP  Semiconductor Device Type: CT and OT 05 (Lead) SOT-23 (C7/CX)					Alloy: Cu)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Markin and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	12.77	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	10.853	678.300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.888	0.782	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	4.888	0.782	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.313	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.038	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	1.605	100.314			Total	100.00	
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		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	0.090	5.625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.017	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.009	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.004	263	0.12	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	1.200	75.000	0.12	Silver (Aa)	7440-22-4	75 75	0.10
Doped Gold	7440-57-5	Wire Bond	0.200	0.032	2.000		Modified Epoxy Resin	13561-08-5	14	
Tin		n external leads (pins) - Matte Tin / annealed at 150°C for 1		0.200	12,500	Di	glycidylether of bisphenol-F	54208-63-8	8	
	7440-31-3 Plating 0					Di		34200-03-0	0	
			10. 100 000	16 000	1 000 000		Modified Amine	827-42-0	1	
is compound upter device and its homograpous meterials com-	0.0160 g Tot			16.000	1,000,000		Modified Amine	827-43-0 Total	100.00	
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 chnology Incorporated's knowledge and belief as of the da	omply with EU Directive 2002/95/E ria internal design controls, suppl emical substance is NOT an inten ate of this document, there is no o	al Mass C (RoHS Directive), EU Directive 2011/65/E ier declarations, and /or analytical test data tional ingredient in the semiconductor developed in the s	U (RoHS Recast  I.  ce and, to the be	Directive) and	I with EU	1.20	(mg) Total  Doped Silicon			7.5
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 chnology Incorporated's knowledge and belief as of the da emical substance, if any, is not below the threshold of reg Iding compounds used by Microchip meet the UL94 V0 fla p://ul.com/global/eng/pages/offerings/industries/chemicals	omply with EU Directive 2002/95/E ria internal design controls, supple emical substance is NOT an inten ate of this document, there is no c ulatory concern for any regulator immability standard for plastics. Y s/plastics/	al Mass C (RoHS Directive), EU Directive 2011/65/E ier declarations, and /or analytical test data tional ingredient in the semiconductor dev credible reason to believe that the unavoid y scheme world-wide. You can access the UL iQTM family of datal	U (RoHS Recast  ce and, to the be table impurity con bases to obtain a	Directive) and est of Microchi centration of test report at	l with EU	0.03	(mg) Total	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	7.5
is semiconductor device and its homogenous materials of rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive), impliance with the above EU Directives has been verified vertical substance is absent from the list above, the che chnology incorporated's knowledge and belief as of the deemical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flap://ul.com/global/eng/pages/offerings/industries/chemicals e protective "tubes" in which the specific product is shipp x and certain "reels" may be made from PVC plastic.	omply with EU Directive 2002/95/E ria internal design controls, supple emical substance is NOT an inten ate of this document, there is no c ulatory concern for any regulator immability standard for plastics. Y s/plastics/	al Mass C (RoHS Directive), EU Directive 2011/65/E ier declarations, and /or analytical test data tional ingredient in the semiconductor dev credible reason to believe that the unavoid y scheme world-wide. You can access the UL iQTM family of datal	U (RoHS Recast  ce and, to the be table impurity con bases to obtain a	Directive) and est of Microchi centration of test report at	l with EU		(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	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive), impliance with the above EU Directives has been verified vanchemical substance is absent from the list above, the chechnology Incorporated's knowledge and belief as of the demical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 VO flap://ul.com/global/eng/pages/offerings/industries/chemicals e protective "tubes" in which the specific product is shipp	omply with EU Directive 2002/95/E ria internal design controls, supplemical substance is NOT an intended of this document, there is no culatory concern for any regulator mmability standard for plastics. Yellow the standard for plastics of the made from polyvinyl chlorometers of the standard for this form concerning substants to the best of its knowledge and measure it has been compiled form disclosure as trade secrets and of the average weight of these portions.	al Mass C (RoHS Directive), EU Directive 2011/65/E ier declarations, and /or analytical test data tional ingredient in the semiconductor dev credible reason to believe that the unavoid- y scheme world-wide. You can access the UL iQTM family of datal tide (PVC) plastic. "Window envelopes" use ces restricted by RoHS in Microchip Techn belief, as of the date listed in this form. Mic pased on the ranges provided in Material S d some information may not have been prunts and the average weight of anticipated	U (RoHS Recast  ce and, to the be able impurity con  bases to obtain a d to hold the pace crochip Technolo afety Data Sheets wided by subcor significant toxic re	Directive) and set of Microchic centration of test report at cking slip on the centration of the centr	p the outer luctor raw lers and raw		(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	
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CT OT 05-SOT-23 10:28 AM : 5/6/2014

MICROCHIP				nation Base A			•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: OT 05 (Lead)	SOT-23 (P6)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	8.39	(mg) Total	Mold Compound	% ot Total Weight	49.38
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		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		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)	mine (Trade Secret - 1003)	4	
	0.0170	g Total Mass						Total	100.00	_
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irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified via int	ernal design control	s, supplier declarations, and /or analytical test data.				0.74	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	4.38
ompliance with the above EU Directives has been verified via int a chemical substance is absent from the list above, the chemica schnology Incorporated's knowledge and belief as of the date of nemical substance, if any, is not below the threshold of regulato	al substance is NOT a this document, ther ry concern for any re	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidal egulatory scheme world-wide.	e and, to the lole impurity co	oncentration o	hip of the	0.74	<del> </del>			4.38
ompliance with the above EU Directives has been verified via int a chemical substance is absent from the list above, the chemica echnology Incorporated's knowledge and belief as of the date of	al substance is NOT a this document, ther ry concern for any re bility standard for pl	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidal egulatory scheme world-wide.	e and, to the lole impurity co	oncentration o	hip of the	0.07	<del> </del>	7440-21-3	100	
ompliance with the above EU Directives has been verified via int a chemical substance is absent from the list above, the chemica schnology Incorporated's knowledge and belief as of the date of nemical substance, if any, is not below the threshold of regulato olding compounds used by Microchip meet the UL94 V0 flamma	al substance is NOT a this document, ther ry concern for any re bility standard for platics/	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidate agulatory scheme world-wide.  astics. You can access the UL iQTM family of database.	e and, to the ble impurity co	oncentration o	hip of the		Doped Silicon	7440-21-3 Total	100	
ompliance with the above EU Directives has been verified via int a chemical substance is absent from the list above, the chemica achnology Incorporated's knowledge and belief as of the date of nemical substance, if any, is not below the threshold of regulato olding compounds used by Microchip meet the UL94 V0 flamma tp://ul.com/global/eng/pages/offerings/industries/chemicals/plas ne protective "tubes" in which the specific product is shipped ar	al substance is NOT a this document, ther ry concern for any re bility standard for pl stics/ re made from polyvir is form concerning s he best of its knowled cosclosure as trade se of the average weigh	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidate gulatory scheme world-wide.  astics. You can access the UL iQTM family of databastics. You can access the UL iQTM family of databastyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Sarcrets and some information may not have been provided of these parts and the average weight of anticipate to the semiconductor of these parts and the average weight of anticipate	e and, to the lole impurity coases to obtain I to hold the place of the logy Incorporately Technology Incorporately Data Shejided by subcad significant	a test report a acking slip on ated's semicology Incorpor ets provided b ontract assem toxic metals c	thip of the at the outer adductor ated cannot by raw		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
ompliance with the above EU Directives has been verified via int a chemical substance is absent from the list above, the chemical schnology Incorporated's knowledge and belief as of the date of the mical substance, if any, is not below the threshold of regulato olding compounds used by Microchip meet the UL94 V0 flamma tp://ul.com/global/eng/pages/offerings/industries/chemicals/plaster protective "tubes" in which the specific product is shipped at example the protective "tubes" in which the specific product is shipped at example the protective "tubes" in which the specific product is shipped at example the protective the information in the exices in their original packing materials is true and correct to the uarantee the completeness and accuracy of data in this form betaterial suppliers. Supplier information is often protected from distribution in the provided only as estimates of the provided only as estimate	al substance is NOT at this document, ther ry concern for any re bility standard for platics/ re made from polyvir is form concerning see best of its knowled cause it has been cosclosure as trade see of the average weigh and non-metal material ty, express or implied and its subsidiari	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidate gulatory scheme world-wide.  astics. You can access the UL iQTM family of databastics. You can access the UL iQTM family of databastyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Sarcrets and some information may not have been prout of these parts and the average weight of anticipate als contained within silicon devices (silicon IC) in the d, with respect to the information provided in this de	e and, to the lole impurity coases to obtain I to hold the place of the logy Incorporately Technology Incorporately Data Shevided by subcoad significant of finished particularation. The	a test report a cacking slip on ated's semicor logy Incorpor ets provided b ontract assem toxic metals c s. e exclusive, lin	thip of the at the outer inductor ated cannot by raw oblers and components.		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	0.43
ompliance with the above EU Directives has been verified via int a chemical substance is absent from the list above, the chemica schnology Incorporated's knowledge and belief as of the date of nemical substance, if any, is not below the threshold of regulato olding compounds used by Microchip meet the UL94 V0 flamma tp://ul.com/global/eng/pages/offerings/industries/chemicals/plas ne protective "tubes" in which the specific product is shipped at ox and certain "reels" may be made from PVC plastic.  icrochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to the uarantee the completeness and accuracy of data in this form betaterial suppliers. Supplier information is often protected from distribution is provided only as estimates desee estimates do not include trace levels of dopants, metals, an icrochip Technology Incorporated does not provide any warrant oduct warranties provided by Microchip Technology Incorporated dout warranties provided warranties provided warranties provided warranties provided warranties provided warranties p	al substance is NOT at this document, ther ry concern for any re bility standard for platics/ re made from polyvir is form concerning see best of its knowler cause it has been consclosure as trade see of the average weigh and non-metal materiaty, express or implied and its subsidiarioices.	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidate gulatory scheme world-wide.  astics. You can access the UL iQTM family of databates the control of the contro	e and, to the lole impurity of ases to obtain I to hold the plogy Incorporation of the plogy Incorpora	a test report a acking slip on ated's semicor ology Incorpor ets provided b ontract assem toxic metals c s. e exclusive, lin sale. These an	thip of the at at the outer inductor ated cannot by raw ablers and components. inited re provided	0.07	Doped 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 hour  7440-31-5	100 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.43
compliance with the above EU Directives has been verified via into a chemical substance is absent from the list above, the chemical schnology Incorporated's knowledge and belief as of the date of nemical substance, if any, is not below the threshold of regulation olding compounds used by Microchip meet the UL94 V0 flamma tp://ul.com/global/eng/pages/offerings/industries/chemicals/plastine protective "tubes" in which the specific product is shipped and an advisor of the complete of the protective shipped and certain "reels" may be made from PVC plastic. Incredit in the series of the protection in the protection of the protection in the protection of the	al substance is NOT at this document, ther ry concern for any re bility standard for platics/ re made from polyvir is form concerning see best of its knowler cause it has been consclosure as trade see of the average weigh and non-metal materiaty, express or implied and its subsidiarioices.	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidate gulatory scheme world-wide.  astics. You can access the UL iQTM family of databates the control of the contro	e and, to the lole impurity or ases to obtain I to hold the plogy Incorporation of the plogy Incorpora	a test report a acking slip on ated's semicor ology Incorpor ets provided b ontract assem toxic metals c s. e exclusive, lin sale. These an	thip of the at at the outer inductor ated cannot by raw ablers and components. inited re provided	0.07	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 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.43

OT 5 SOT-23 10:29 AM : 5/6/2014

Comison duster Davise Type				ation Base A			•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Semiconductor Device Type.	: CH and OT 06	6 (Lead) SOT-23 (C8 / CZ)								63
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	mag	13.57	(mg) Total	Mold Compound	% ot Total Weight	79.8
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	
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	
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	
Silicon dioxide	Trade Secret	Die Attach	0.338	0.057	3,375		Phosphorous	7723-14-0	0.08	
Curing / Hardener	Trade Secret	Die Attach	0.075	0.013	750			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
Gold	7440-57-5	Wire Bond	0.200	0.034	2,000		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	
		TOTALS:	100.000	17.000	1,000,000		Curing / Hardener	Trade Secret	10	
	0.0170 g	7 Total Mass						Total	100.00	
semiconductor device and its homogenous materials comply wit tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via interna		, , ,	no Recast Dir	ective) and wi	in EU	1.28	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
hemical substance is absent from the list above, the chemical su		intentional ingredient in the semiconductor device and	d to the best o						400.00	1
s not below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flammability	ory scheme world-wi		entration of the	chemical sub		0.03	(mg) Total	Total Wire Bond	100.00	0.2
s not below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flammabilit /ul.com/global/eng/pages/offerings/industries/chemicals/plastics protective "tubes" in which the specific product is shipped are m	ory scheme world-wi ity standard for plast s/	ride. tics. You can access the UL iQTM family of databases	entration of the	chemical sub	ostance, if	0.03	(mg) Total	Wire Bond	% of Total Weight	0.2
s not below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flammabilit /ul.com/global/eng/pages/offerings/industries/chemicals/plastics protective "tubes" in which the specific product is shipped are m in "reels" may be made from PVC plastic.	ory scheme world-wi ity standard for plast s/ nade from polyvinyl	ride.  tics. You can access the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to h	entration of the	e chemical substitute treport at	ostance, if	0.03	(mg) Total  Doped Gold	T		0.2
s not below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flammabilit /ul.com/global/eng/pages/offerings/industries/chemicals/plastics protective "tubes" in which the specific product is shipped are m	ory scheme world-wi ity standard for plast s/ made from polyvinyl form concerning sub- knowledge and belief compiled based on t rets and some inform nese parts and the av	ride.  tics. You can access the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to have the provided of the provided by RoHS in Microchip Technology If, as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Sheets pration may not have been provided by subcontract assverage weight of anticipated significant toxic metals or	entration of the to obtain a test hold the packir Incorporated's logy Incorporate ovided by raw esemblers and	e chemical substitute of the control	ostance, if  outer box and  or devices in rantee the liers. uppliers.	0.03	, ,	Wire Bond 7440-57-5	% of Total Weight	0.2
is not below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flammability /ul.com/global/eng/pages/offerings/industries/chemicals/plastics or otective "tubes" in which the specific product is shipped are min "reels" may be made from PVC plastic.  In this process and accuracy of data in this form because it has been of leier information is often protected from disclosure as trade secretation is provided only as estimates of the average weight of the	ory scheme world-wi ity standard for plast s/ made from polyvinyl form concerning sub- knowledge and belief compiled based on t rets and some inform nese parts and the av tained within silicon express or implied, w	ride.  tics. You can access the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to he estances restricted by RoHS in Microchip Technology If, as of the date listed in this form. Microchip Technology Ithe ranges provided in Material Safety Data Sheets prenation may not have been provided by subcontract asserted werage weight of anticipated significant toxic metals condevices (silicon IC) in the finished parts.	entration of the to obtain a test mold the packin Incorporated's goy Incorporate ovided by raw asemblers and omponents. The	e chemical substance is report at g slip on the constance semiconducted cannot gua material suppraw material seese estimates usive, limited	ostance, if  outer box and  or devices in rantee the liers. uppliers. s do not  product	0.03	, ,	Wire Bond 7440-57-5	% of Total Weight	0.2
is not below the threshold of regulatory concern for any regulator ing compounds used by Microchip meet the UL94 V0 flammability (ul.com/global/eng/pages/offerings/industries/chemicals/plastics protective "tubes" in which the specific product is shipped are min "reels" may be made from PVC plastic.  In the product of the protection of the product is shipped are min "reels" may be made from PVC plastic.  In the product of the protection of the product is shipped are min "reels" may be made from PVC plastic.  In the product is shipped and provide and product is shipped	ory scheme world-wi ity standard for plast s/ made from polyvinyl form concerning sub- knowledge and belief compiled based on t rets and some inform lese parts and the av tained within silicon express or implied, w subsidiaries are conta	ride.  tics. You can access the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to he stances restricted by RoHS in Microchip Technology of a soft the date listed in this form. Microchip Technology of the ranges provided in Material Safety Data Sheets proposed in Material Safety Data Sheets proposed weight of anticipated significant toxic metals of devices (silicon IC) in the finished parts.  with respect to the information provided in this declaration and in Microchip's standard terms and conditions of Declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages, declarations and shall not be liable for any damages.	entration of the to obtain a test hold the packin incorporated's orgy incorporate ovided by raw isemblers and omponents. The ation. The exclif f sale. These a	e chemical sub treport at g slip on the of semiconduct ed cannot gua material supp raw material s lese estimates usive, limited re provided in	outer box and or devices in rantee the liers. uppliers. s do not product Microchip's		Doped Gold	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	

CH OT 6 SOT-23 NC 10:29 AM : 5/6/2014

Semiconductor Device Type: OT 06 (Lead) SOT-23 (6A)		Alloy: Cu)			nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling
Basic Substance CAS Number Sub-Component Weight					_		e4
Silica vitreous (or fused) 60676-86-0 Mold Compound 41 021	mg/part	ppm	7.94	(mg) Total	Mold Compound	% ot Total Weight	48.26
	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	1	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 7440-05-03 Plating on external leads (pins) 0.015	0.002	145	Ar	mine (Trade Secret - 10039)	mine (Trade Secret - 1003)	4	
Gold 7440-57-5 Plating on external leads (pins) 0.005	0.001	47			Total	100.00	-
TOTALS: 100.000	16.450	1,000,000	0.18	Total (mg)	Chip (Die)	% of Total Weight	1.09
0.0165 g Total Mass				Doped Silicon	7440-21-3	100	
					Total	100.00	
• • • • • • • • • • • • • • • • • • • •			0.02	(mg) Total	Wire Bond	% of Total Weight	0.12
mical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the larted's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration				(mg) Total  Doped Gold	T	T	0.12
unical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the lorated'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.	of the chemica	I substance, if			Wire Bond	% of Total Weight	0.12
mical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the lorated'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.  In compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain access the UL iQTM family of databases to obtain access the UL iQTM family of databases to obtain the complete of the comp	of the chemica a test report a	I substance, if			Wire Bond 7440-57-5	% of Total Weight	0.12
mical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the lorated'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.  I compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain com/global/eng/pages/offerings/industries/chemicals/plastics/  I tective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the patain "reels" may be made from PVC plastic.  In Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporation 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 Incorporation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers tion is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals componen	of the chemica a test report a acking slip on ted's semicon orporated can d by raw mater and raw mater	I substance, if the outer box ductor devices tot guarantee ial suppliers. ial suppliers.	0.07	Doped Gold	Wire Bond 7440-57-5 Total Plating on external	% of Total Weight	
emical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the lorated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration is not below the threshold of regulatory concern for any regulatory scheme world-wide.  It geompounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain ul.com/global/eng/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 pertain "reels" may be made from PVC plastic.  Thip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporate or 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 Incorporate or 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 Incorporate or 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 Incorporate or original packing note or provided in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provide er information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers action is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals componen to trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  The provided by Microchip Technology Incorporated and its subsidiaries are contain	of the chemica a test report a acking slip on ted's semicon orporated can d by raw mater and raw mater s. These estim exclusive, lim	I substance, if the outer box ductor devices of guarantee all suppliers. ial suppliers. ates do not	0.07	Doped Gold  (mg) Total	Wire Bond 7440-57-5 Total Plating on external leads (pins)	% of Total Weight 100 100.00 % of Total Weight	
mical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the lorated'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.  If compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain Lcom/global/eng/pages/offerings/industries/chemicals/plastics/  Intentional compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain Lcom/global/eng/pages/offerings/industries/chemicals/plastics/  Intentional compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain Lcom/global/eng/pages/offerings/industries/chemicals/plastics/  Intentional compounds used by Microchip Technology Incomporated in the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the protain "reels" may be made from PVC plastic.  Intentional place in the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the protain "reels" may be made from PVC plastic.  Intentional place in the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the protain "reels" in the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the protain "reels" in the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the protain "reels" in the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the protain "reels" in the specific product is shipped are made from polyvinyl chlorid	of the chemica a test report a acking slip on ted's semicon orporated cani d by raw mater and raw mater is. These estim exclusive, lim ese are provide	substance, if the outer box ductor devices tot guarantee tal suppliers. tal suppliers. ates do not ted product d in uential or	0.07	Doped Gold  (mg) Total  Nickel	Wire Bond 7440-57-5  Total  Plating on external leads (pins) 7440-02-0	% of Total Weight 100 100.00 % of Total Weight 95.73	

OT 06 SOT-23 10:29 AM : 5/6/2014

Semiconductor Device Type:	CH and OT	06 (Lead) SOT-23 (CR)		nation Base pper Alloy (0	•		•	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In"  Sub-Component	% Total Weight	mg/part	nnm	13.57	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	11.531	<b>ppm</b> 678.300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.888	0.831	48.878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	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	
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	
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	7631-86-9	Die Attach	0.169	0.029	1,688		Phosphorous	7723-14-0	0.08	
Curing / Hardener	Trade Secret	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
Doped Gold	7440-57-5	Wire Bond	0.200	0.034	2,000		Epoxy resin	Trade Secret	75	
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	7631-86-9	23	
		TOTALS:	100.000	17.000	1,000,000		Curing / Hardener	Trade Secret	3	
	0.0170	g Total Mass						Total	100.00	
s semiconductor device and its homogenous materials comply with active 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (R	RoHS Recast	Directive) and	I with EU	1.28	(mg) Total	Chip (Die)	% of Total Weight	7.5
npliance with the above EU Directives has been verified via interna	l design contro	s. supplier declarations, and /or analytical test data.			ŀ		Doped Silicon	7440-21-3	100	
chemical substance is absent from the list above, the chemical sub	-			-4 -4 84:			Ворой Списоп	Total	100.00	ļ
hnology Incorporated's knowledge and belief as of the date of this mical substance, if any, is not below the threshold of regulatory co	document, the encern for any r	e is no credible reason to believe that the unavoidable egulatory scheme world-wide.	impurity con	centration of	the			1		
ding compounds used by Microchip meet the UL94 V0 flammability ://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/		astics. You can access the UL IQTM family of database	s to obtain a	test report at		0.03	(mg) Total	Wire Bond	% of Total Weight	0.2
protective "tubes" in which the specific product is shipped are ma and certain "reels" may be made from PVC plastic.	ade from polyvii	nyl chloride (PVC) plastic. "Window envelopes" used to	hold the pac	king slip on t	he outer		Doped Gold	7440-57-5	100	
rochip Technology Incorporated believes the information in this for ices in their original packing materials is true and correct to the be	st of its knowle e it has been co	dge and belief, as of the date listed in this form. Microc Impiled based on the ranges provided in Material Safety	hip Technolo y Data Sheets	gy Incorporat s provided by	ed cannot raw			Total	100.00	•
rantee the completeness and accuracy of data in this form becaus erial suppliers. Supplier information is often protected from disclo: erial suppliers. Information is provided only as estimates of the ave				netals compo	nents.					
erial suppliers. Supplier information is often protected from discloserial suppliers. Information is provided only as estimates of the avesse estimates do not include trace levels of dopants, metals, and no	erage weight of on-metal materia	these parts and the average weight of anticipated signi als contained within silicon devices (silicon IC) in the fir	ificant toxic n					Plating on external		
erial suppliers. Supplier information is often protected from discloserial suppliers. Information is provided only as estimates of the ave	erage weight of on-metal materia opress or implie	these parts and the average weight of anticipated signi als contained within silicon devices (silicon IC) in the fir d, with respect to the information provided in this decla	ificant toxic noished parts.	xclusive, limit	ted product	0.21	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
erial suppliers. Supplier information is often protected from discloserial suppliers. Information is provided only as estimates of the avesse estimates do not include trace levels of dopants, metals, and no rochip Technology Incorporated does not provide any warranty, expanded by Microchip Technology Incorporated and its sul	erage weight of on-metal materia opress or implie bsidiaries are co Material Contel eliance on the ir	these parts and the average weight of anticipated signi als contained within silicon devices (silicon IC) in the file d, with respect to the information provided in this declar ontained in Microchip's standard terms and conditions at Declarations and shall not be liable for any damages,	ificant toxic n nished parts. aration. The e of sale. Thes , direct or ind	xclusive, limit e are provide irect, conseq	ted product d in uential or	0.21	(mg) Total	leads (pins) - Matte Tin / annealed at 150°C for	% of Total Weight	1.25

CH OT 06-SOT-23 NC 10:30 AM : 5/6/2014

MICROCHIP  Semiconductor Device Typ	o MP 02 c	207.00		nation Base A	•		•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: IVID US (Lead									e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	mag	28.26	(mg) Total	Mold Compound	% ot Total Weight	54.56
Silica, vitreous	60676-86-0	Mold Compound	46.376	24.023	463,760		Silica, vitreous	60676-86-0	85.00	1
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.342	1.731	33.418	1	Epoxy Resin	Trade Secret	6.13	1
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.342	1.731	33,418	1	Phenolic Resin	Trade Secret	6.13	1
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			Total	100.00	<u>4</u> )
Iron	7439-89-6	Lead Frame	1.040	0.539	10.399	22.92	(mg) Total	Lead Frame	% of Total Weight	44.25
Silver	7440-22-4	Lead Frame	0.843	0.437	8.430		Copper	7440-50-8	95.54	1
Zinc	7440-66-6	Lead Frame	0.055	0.029	553		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.037	0.019	365	1	Silver	7440-22-4	1.91	1
Metal oxide	Trade Secret	Die Attach	0.102	0.053	1.023	1	Zinc	7440-66-6	0.13	1
Epoxy resins	Trade Secret	Die Attach	0.102	0.053	1,023	1	Phosphorous	7723-14-0	0.08	1
Glycol ethers	Trade Secret	Die Attach	0.078	0.040	775			Total	100.00	1
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	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.120	0.062	1,200		Glycol ethers	Trade Secret	25	
1111	7440 01 0	TOTALS:		51.800	1.000.000		Curing / Hardener	Trade Secret	9	
	0.0540	g Total Mass	100.000	01.000	1,000,000		Culling / Hardener	Total	100.00	1
This semiconductor device and its homogenous materials compl		•	JC Booost Dire	otivo) and with	EII					
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	y with EU Directive 2	.002/95/EC (RORS Directive), EO Directive 2011/65/EO (ROF	no Recast Dire	ctive) and with	EU	0.21	Total (mg)	Chip (Die)	% of Total Weight	0.41
							, ,,	· · · · · · · · · · · · · · · · · · ·	/o or rotal trongin	
compliance with the above EU Directives has been verified via in	ternal design contro	ls, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	1
·	•						Doped Silicon	7440-21-3	100	
a chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical corporated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regulatory.	al substance is NOT ent, there is no credi ulatory scheme work	n intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce d-wide.	entration of the	chemical subs			Doped Silicon	,		
a chemical substance is absent from the list above, the chemica corporated's knowledge and belief as of the date of this documing, is not below the threshold of regulatory concern for any regulatory concern for any regu	al substance is NOT ent, there is no credi ulatory scheme work ability standard for p	n intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce d-wide.	entration of the	chemical subs		0.18	Doped Silicon  (mg) Total	7440-21-3	100	
f a chemical substance is absent from the list above, the chemica ncorporated's knowledge and belief as of the date of this documiny, is not below the threshold of regulatory concern for any regulatory concern for any regulatory concern for any regulatory concern for any regulation compounds used by Microchip meet the UL94 V0 flammattp://ul.com/global/eng/pages/offerings/industries/chemicals/plactices/c	al substance is NOT ent, there is no credi ulatory scheme work ability standard for p stics/	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce I-wide. lastics. You can access the UL iQTM family of databases to	entration of the	chemical subs	stance, if	0.18		7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	0.35
Compliance with the above EU Directives has been verified via in f a chemical substance is absent from the list above, the chemical norporated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regulatory considerable con	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 teen compiled based d some information nd the average weig	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concest-wide.  lastics. You can access the UL iQTM family of databases the unique concest in the concest i	intration of the to obtain a test old the packing incorporated's gy Incorporate vided by raw n and raw mater	chemical subs report at g slip on the ou semiconducto d cannot guara naterial suppliers. Ir	stance, if  uter box and  r devices in  untee the  ers. Supplier  nformation is		(mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.35
f a chemical substance is absent from the list above, the chemical norporated's knowledge and belief as of the date of this documiny, is not below the threshold of regulatory concern for any formation in the protective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information in the heir original packing materials is true and correct to the best of its completeness and accuracy of data in this form because it has be information is often protected from disclosure as trade secrets and provided only as estimates of the average weight of these parts a provided only as estimates of the average weight of these parts a	al substance is NOT ent, there is no credi ulatory scheme work ability standard for p stics/ re made from polyvi nis form concerning ts knowledge and be enen compiled based d some information ind the average weig con devices (silicon ty, express or implie	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concell-wide.  lastics. You can access the UL iQTM family of databases the properties of the propert	entration of the to obtain a test old the packing incorporated's gy Incorporate vided by raw n and raw mater ese estimates cutton. The exclu	report at g slip on the out semiconducto d cannot guara aterial supplie ial suppliers. Ir do not include	stance, if  uter box and  r devices in untee the ers. Supplier offormation is trace levels		(mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	0.35
f a chemical substance is absent from the list above, the chemical norporated's knowledge and belief as of the date of this documiny, is not below the threshold of regulatory concern for any regulatory, is not below the threshold of regulatory concern for any regulatory. Which is not below the threshold of regulatory concern for any regulatory. Which is not below the threshold of regulatory concern for any regulatory. It is not below the substitution of the protective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic.  Whicrochip Technology Incorporated believes the information in their original packing materials is true and correct to the best of its completeness and accuracy of data in this form because it has benformation is often protected from disclosure as trade secrets and provided only as estimates of the average weight of these parts a of dopants, metals, and non-metal materials contained within silic.  Microchip Technology Incorporated does not provide any warrantes provided by Microchip Technology Incorporated and its provided on the provide and the content of the provided on	al substance is NOT ent, there is no credi ulatory scheme work ability standard for p stics/ re made from polyvi  inis form concerning tes knowledge and be ten compiled based of d some information and the average weig con devices (silicon ty, express or implie ts subsidiaries are co es to Material Contei es to Material Contei	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concest-wide.  lastics. You can access the UL iQTM family of databases to a substances restricted by RoHS in Microchip Technology I lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets promay not have been provided by subcontract assemblers the of anticipated significant toxic metals components. The (C) in the finished parts.  d, with respect to the information provided in this declara ontained in Microchip's standard terms and conditions of	intration of the to obtain a test old the packing incorporated's gy Incorporate vided by raw mand raw mater ese estimates outlion. The exclusale. These are irect or indirect or indirect	chemical substruction of the control	atter box and r devices in untee the ers. Supplier unformation is trace levels roduct licrochip's		(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 % of Total Weight 100.00	0.35
a chemical substance is absent from the list above, the chemical corporated's knowledge and belief as of the date of this documiny, is not below the threshold of regulatory concern for any regulatory, is not below the threshold of regulatory concern for any regulatory concerns for any feet and the specific product is shipped and ertain "reels" may be made from PVC plastic.  Ilicrochip Technology Incorporated believes the information in their original packing materials is true and correct to the best of impleteness and accuracy of data in this form because it has be information is often protected from disclosure as trade secrets are rovided only as estimates of the average weight of these parts as f dopants, metals, and non-metal materials contained within silicitic cohip Technology Incorporated does not provide any warran rarranties provided by Microchip Technology Incorporated and in ucutations, sales order acknowledgement, and invoices.  Ilicrochip disclaims any duty to notify users of updates or change therwise, suffered by users or third parties as a result of the use	al substance is NOT ent, there is no credi ulatory scheme work ability standard for p stics/ re made from polyvi  inis form concerning tes knowledge and be ten compiled based of d some information and the average weig con devices (silicon ty, express or implie ts subsidiaries are co es to Material Contei es to Material Contei	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity concest-wide.  lastics. You can access the UL iQTM family of databases to a substances restricted by RoHS in Microchip Technology I lief, as of the date listed in this form. Microchip Technolog on the ranges provided in Material Safety Data Sheets promay not have been provided by subcontract assemblers the of anticipated significant toxic metals components. The (C) in the finished parts.  d, with respect to the information provided in this declara ontained in Microchip's standard terms and conditions of	intration of the to obtain a test old the packing incorporated's gy Incorporate vided by raw mand raw mater ese estimates outlion. The exclusale. These are irect or indirect or indirect	chemical substruction of the control	atter box and r devices in untee the ers. Supplier unformation is trace levels roduct licrochip's		(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	0.35

MB 3 SOT-89 10:30 AM : 5/6/2014

plaince 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  Total 100.00	Semiconductor Device Typ	pe: RC 04 (Lea	d) SOT-143 (F7/AB)		nation Base A pper Alloy (C	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
State   Substance   CLS Number   Sub-Component   Wingly   Right   Ri			"Contained In"	% Total							
Epony Resn (No Journier, No J	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	5.69	(mg) Total	Mold Compound	% ot Total Weight	62.57
Provide Rear   Pot   17.5 Stort   Incident House   Track Stores   Most Compound   1.03   1.	Silica, vitreous	60676-86-0	Mold Compound	53.185	4.840	531.845		Silica, vitreous	60676-86-0	85.00	
Previous Rearn (No BY CL SECO), No dearninomy protocole   Trade Secret   Model Compound   1,503   1,	Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38,324		Epoxy Resin	Trade Secret	6.13	
Cation Black		Trade Secret		3.832	0.349	38,324			Trade Secret	6.13	
Iron	Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.533	0.139	15,330		Epoxy, Cresol Novolac	29690-82-2	2.45	
Nickel 7440-224 Load Frame 0.52 0.068 5.522 bon 7400-224 Conference 0.52 0.068 5.522 bon 7400-224 bon 7400-224 bon 8400-224 bon	Carbon Black	1333-86-4	Mold Compound	0.188	0.017	1,877		Carbon Black	1333-86-4	0.30	
Silver 7,440-224 Lead Frame 0,0502 0,068 0,022 New Procedure 1,440-414 New Pro	Iron	7439-89-6	Lead Frame	14.095	1.283	140,947			Total	100.00	J
Silver 7440-224 Leaf Farme 0.552 0.046 5.022   mon 7459-968 5.427   mon	Nickel	7440-02-0	Lead Frame	11.071	1.007	110,712	2.40	(mg) Total	Lead Frame	% of Total Weight	26.36
Cobat							20				20.00
Marganese 7439-96-5 Lead Frame 0.211 0.019 2.109											
Exercise (Metal)   7440-44-0   Lead Frame   0.132   0.012   1.1318   Minor   7440-24-13   Lead Frame   0.079   0.007   791   Minor   M											
Silicino   7440-21-3   Lead Firame   0.077   0.007   751   Phosphorous   7723-14-0   Lead Firame   0.077   0.007   50   Silver (Val)   7440-24-1   0.04   0.04   0.04   0.04   Phosphorous   7723-14-0   0.04   0.004   0.004   0.004   0.004   Phosphorous   7723-14-0   0.04   0.004   0.004   0.004   0.004   Phosphorous   7440-24-1   0.04   0.004   0.004   0.004   0.004   Phosphorous   7440-24-1   0.04   0.004   0.004   0.004   0.004   0.004   0.004   0.004   Phosphorous   7440-24-1   0.04   0.004   0.											
Phosphorous 1772-140 Lead Frame 0.007 0.001 86 Silver (Ag) 1740-24 Die Attlich 0.005											
She'et (Ag) 440-22-4 Die Attach D-289 0.024 2_591 Proprietary Nersin Trade Secret Die Attach Die Attach D-289 0.005 611 0.006 611 Proprietary Curring agent & Hardener Trade Secret Die Attach D-289 0.005 0											
Proprietary Resen   Trade Secret   Die Attach   0.061   0.006   611   Proprietary Curing agent & Hardener   Trade Secret   Die Attach   0.010   0.001   89   Proprietary Curing agent & Hardener   Trade Secret   Die Attach   0.010   0.001   91   Proprietary Curing agent & Hardener   Trade Secret   Die Attach   0.010   0.001											
Proprietary Curing agent & Hardener   Trade Secret   Die Attach   0.010   0.001   90   Total   100.00   Silicion   7440-27-13   Chip (Die)   4.290   0.390   42.990   0.390   42											
Silicon   744021-3   Chip (Dia)   4.290   0.39   4.2900   0.30   (mg) Total   Die Attach   % of Total Weight   0.33   0.37   (5.300   0.300								Priospriorous			
Gold 7440-57-5 Wire Bond Tin 7440-57-5 Plang on element leads (logic) - Method Thri / Park (1906) - Method Thri /											
Tin 7440-31-5 Purry onesterral tasks prinary - Maters Tiny / americal set story Cert Incom. 6,340 0,577 6,3400 proprietary (Zurry agent 8 Hardoner) 1,000,000 propriet							0.03				0.33
O.0091 g Total Mass  O.0092 g											
O.0091 g Total Mass    Total	Tin	7440-31-5									
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (Roh S Directive), EU Directive).  10.03 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Chip (Die) % of Total Weight 4.29   10.00 Total (mg) Total (mg											
semiconductor device and its homogenous materials comply with EU Directive 2002/55/EC (RoHS Directive), EU Directive) and with EU  0.39 Total (mg) Chip (Die) % of Total Weight 4.29  100.09  Total (mg) Chip (Die) % of Total Weight 4.29  100.09  Total (mg) Chip (Die) % of Total Weight 4.29  100.00  Total (mg) Chip (Die) % of Total Weight 4.29  100.00  Total (mg) Chip (Die) % of Total Weight 4.29  100.00  Total (mg) Chip (Die) % of Total Weight 4.29  100.00  Total (mg) Chip (Die) % of Total Weight 4.29  100.00  Total (mg) Tot			TOTALS:	100.000	9.100	1,000,000	Proprietai	ry Curing agent & Hardener			
ing compounds used by Microchip meet the UL94 Vp flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at Mulcom/global/eng/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 in "reels" may be made from PVC plastic.  Doped Gold  7440-57-5  100  Doped Gold  7440-57-5  100  Doped Gold  7440-57-5  100  Total  Doped Gold  7440-57-5  100  Total  Doped Gold  7440-57-5  100  Plastics 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. Finormation is ded only as estimates of the average weight of anticipated significant toxic metals components. These estimates do not include trace levels pants, 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 Microchip's standard terms and conditions of sale. These are provided in Microchip's under the condition of sale and sale (pins) - Matter Tin/ annealed at 160°C for 1 hour annealed at 160°			g Total Mass			, ,			Total	100.00	4.29
Aut.com/global/eng/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 in "reels" may be made from PVC plastic.    Doped Gold   T440-57-5   100	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via ir	y with EU Directive	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.	HS Recast Direc	ctive) and with	EU		Total (mg)	Total Chip (Die) 7440-21-3	100.00 % of Total Weight	4.29
Total 100.00  To	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified via in  memical 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	y with EU Directive sternal design control al substance is NOT ent, there is no cred ulatory scheme worl	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rohols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conced-wide.	IS Recast Directly to the best of ontration of the	ctive) and with  Microchip Tec chemical subs	EU	0.39	Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % of Total Weight 100 100.00	
chip 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 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 data in this form disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is ded 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 pants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  The provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product interest 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 Matter Tin/annealed at 150°C for 1 annealed at 150°C for 1 hour.  The 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 Matter Tin/annealed at 150°C for 1 hour.  The 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 deads (pins) - Matter Tin/annealed at 150°C for 1 hour.  The provided by Microchip Technology Incorporated does not provide any	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified via in  nemical 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	y with EU Directive ternal design control al substance is NOT ent, there is no cred ulatory scheme work ability standard for patics/	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rohols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conced-wide.  blastics. You can access the UL iQTM family of databases to	dS Recast Direct I, to the best of ontration of the to obtain a test	ctive) and with  Microchip Tec chemical subs	EU chnology stance, if	0.39	Total (mg)  Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	
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Ichip Identificity provided by Microphrated adves not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, immitted product in this declaration. The exclusive, immitted product and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's annealed at 150°C for 1 hour.    leads (pins) - Matte Tin   annealed at 150°C for 1 hour.   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 secretificate of Compliance for semiconductor products.	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 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  orotective "tubes" in which the specific product is shipped a  in "reels" may be made from PVC plastic.	y with EU Directive aternal design control al substance is NOT ent, there is no cred ulatory scheme work ability standard for pastics/ are made from polyvi	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Roh  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conce d-wide.  olastics. You can access the UL iQTM family of databases to inyl chloride (PVC) plastic. "Window envelopes" used to h	IS Recast Direct I, to the best of intration of the to obtain a test old the packing	Microchip Tec chemical subs report at	EU chnology stance, if	0.39	Total (mg)  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	
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Total 100.00	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 docur 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/plorotective "tubes" in which the specific product is shipped a in "reels" may be made from PVC plastic.  Sochip Technology Incorporated believes the information in to original packing materials is true and correct to the best of oleteness and accuracy of data in this form because it has mation is often protected from disclosure as trade secrets aded only as estimates of the average weight of these parts apants, metals, and non-metal materials contained within sill occhip Technology Incorporated does not provide any warrar	y with EU Directive.  Iternal design control al substance is NOT ent, there is no cred ulatory scheme worl ability standard for pastics/ ire made from polyvinis form concerning ts knowledge and been compiled based al some information and the average weig con devices (silicon tty, express or implied	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rohols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conced-dwide.  blastics. You can access the UL iQTM family of databases of invitable in the invitable in	Is Recast Direct I, to the best of intration of the to obtain a test to old the packing incorporated's gy Incorporated y raw m and raw materi ese estimates d tton. The exclu	Microchip Tecchemical subs report at g slip on the ou semiconducto d cannot guara aterial supplie al suppliers. Ir lo not include	EU chnology stance, if  uter box and r devices in sintee the irs. Supplier iformation is trace levels	0.39	Total (mg)  Doped Silicon  (mg) Total  Doped Gold	Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.11
	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Dilance with the above EU Directives has been verified via in memical 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 reging compounds used by Microchip meet the UL94 V0 flamm/vll.com/global/eng/pages/offerings/industries/chemicals/playortective "tubes" in which the specific product is shipped as in "reels" may be made from PVC plastic.  Sochip Technology Incorporated believes the information in toriginal packing materials is true and correct to the best of eleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets a ded only as estimates of the average weight of these parts a pants, metals, and non-metal materials contained within sili sochip Technology Incorporated does not provide any warrar mittes provided by Microchip Technology Incorporated and attions, sales order acknowledgement, and invoices.	y with EU Directive.  Iternal design control al substance is NOT ent, there is no cred ulatory scheme worl ability standard for p stics/ are made from polyv/ his form concerning ts knowledge and b een compiled based and some information and the average weig con devices (silicon ty, express or implict ts subsidiaries are c	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rohols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and ible reason to believe that the unavoidable impurity conced-wide.  clastics. You can access the UL iQTM family of databases to invite the control of	Is Recast Direct I, to the best of intration of the to obtain a test to obtain a test to old the packing incorporated inco	Microchip Tecchemical substreport at galip on the outside all supplies	EU chnology stance, if  r devices in intee the ers. Supplier iformation is trace levels  roduct licrochip's	0.39	Total (mg)  Doped Silicon  (mg) Total  Doped Gold  (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 100 100.00	0.11

RC 4 SOT-143 10:30 AM : 5/6/2014

pollance 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 Technology proporated'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 it 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 control of the chemical substance, if it is not believe that the unavoidable impurity concentration of the chemical substance, if it is not believe that the unavoidable impurity concentration of the chemical substance, if it is not interpretation of the c	MICROCHIP  Semiconductor Device Type	e: DB 03 (Lead) S	OT-223 (F6)		ation Base A oper Alloy (C	-		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Siles, virsions	Pacia Substanca	CAS Number		,	malnart	nnm	56.72	(mg) Total	Mold Compound	% ot Total Weight	49.02
Epony Rean No Exercise, No distritution (my toxicols)   Table Secret   Mold Compound   3,002   3,474   3,0025   5,000   5,00			•				-	Silica vitroous	60676-96-0	95.00	
Principe (Resin ( No Br / Cs. SDO), No distritionary visible)   Trade Secret   Mold Compound   1,201   1,300   1,300									*****		
Cathor Black   1353-96-2											
Castor Black  Cooper  (746)-0-0-0  Cooper (746)-0-0  Cooper (746)-0-0  Cooper (746)-0-0  Cooper (746)-0-0											
Coppet   7409-03-05   Lead Frame   1.06   1.702   1.054   54.9 (a)   60.00   74.00   1.054   54.9 (a)   74.00   1.054   54.9 (a)   74.00   1.054   54.9 (a)   74.00   1.054   74.0											
Irin   748-98-6   Load Frame   0.986   1.077   11.054   54.43   (mg) Total   Lead Frame   0.986   1.077   3.961   Copper   7440-90-3   0.961   7440-92-4   Load Frame   0.059   0.058   588   Copper   7440-90-3   0.961   7440-92-4   Copper	Copper	7440-50-8		44.941	51.997				Total	100.00	ļ
Silver 7440-224 Least Frame 0.0596 0.068 558						-,	54.43	(mg) Total			47.04
Zinc							34.43				47.04
Phosphorous Projective Vision											
Shere (Ag) 7440-224 De Attach 0.502 0.881 5.024 Proprietary Ream 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret De Attach 0.019 0.022 192 Secret 1 Trade Secret 1 Trade Secret 192 Secret 1 Trade Secret 192 Secret 1 Trade Secret 192 Secret 1 Trade Secret 193 Secret 1 Trade Secret 1 Trade Secret 193 Secret 1 Trade Secret 1 Trade Secret 1 Trade Secret 1 Trade Secret 193 Secret 1 Trade											
Propertiary Curing agent & Hardoner Trade Sacret De Attach On 19 0.22 192 From 1920 Fr											
Proprietary Curing agent & Hardener Trade Secret Die Attach 0.019 0.022 192 182 Total Chip (Ne) 1.580											
Silicon 7440/21-3 Chip (Die) 1,560 1,828 15,800 0.74 (mg) Total Weight 0.44 (Mg) Total Weight 0.45 (Mg) Total Weig	-1 7					, .	ļ.	- Hoophorodo			
Gold 744057-5   Write Bond 17403-15   Parag on external basis grows - Mosts To / 1870   1,500   1,14   1,500   1,500   1,15   1,000,000   1,15   1,000   1,15   1,000,000   1,15   1,000   1,15   1,000,000   1,15   1,000,000   1,15   1,000,000   1,15   1,000   1,15   1,000,000   1							0.74	(mg) Total			0.64
Tin P440:315 Rearge neternal table pages). Mater Tin / amounted at 100 Cot in hour Lab (1.570) 1.816 10.000 115.700 1.000,000 115.700 1.00						- ,	0.74				0.04
O.1157 g Total Mass  O.1157 g											
O.1157 g Total Mass 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 citive 2002/95/EC (RoHS Directive).  Ipliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Inchemical substance is absent from the list above, the chemical substance is NDT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology proprated Snawdege and belief as of the date of this document, there is no cretalible 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 U.94 V0 flammability standard for plastics. You can access the U. iQTM family of databases to obtain a test report at //ful. comylobal/eeighgages/offerings/industries/chemicals/plastics/  In 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.  In 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.  In 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.  In 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.  In product in the product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hol	IIII	7440-31-3					Descriptor				
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (Rind-of-Life Vehicles (ELV) Directive).  1.83 Total (mg) Chip (Die) % of Total Weight 1.58 million control of the Chip (Die) % of Total				100.000	113.700	1,000,000	Proprietary	Curing agent & Hardener		·	
npliance 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 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.  ding compounds used by Microchip meet the UL-94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ding compounds used by Microchip meet the UL-94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at ding compounds used by Microchip Technology incorporated is nice and accuracy of data in this form because it has been occupiled based on the ranges provided in Material Safety Data Sheeca provided by a warmaterial suppliers. Total 100.00  Total 100.00  Wire Bond % of Total Weight 0.15  Doped Gold 7440-57-5 100  Total 100.00  Total 100.00  Total 100.00  Wire Bond % of Total Weight 0.15  Doped Gold 7440-57-5 100  Doped Gold 7440-57-5 100											
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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	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via integration.	ernal design controls	supplier declarations, and /or analytical test data.		·		1.83	i	7440-21-3	100	1.58
Doped Gold 7440-57-5 100  Doped Gold 7440-57-5 100  Total 100.00  Total	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via interpretarion in the list above, the chemical substance is absent from the list above, the chemical reporated's knowledge and belief as of the date of this docume is not below the threshold of regulatory concern for any regu	ernal design controls al substance is NOT a ent, there is no credib latory scheme world-	supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device are reason to believe that the unavoidable impurity counted.	and, to the bes	t of Microchip the chemical s	Technology		Doped Silicon	7440-21-3 Total	100	
rechip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices beit 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 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 suppliers. In this form protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. In the 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 ude trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  In the 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 annual and invoices.  In the provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual and invoices.  In the provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual and invoices.  In the provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in annual and invoices.  In the provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information in Microchip's standard terms and conditions of sale. These are provided in annual and invoices.  In the provided by Microchip T	ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via interpretable. The 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 regulating compounds used by Microchip meet the UL94 V0 flamma	ernal design controls Il substance is NOT a ent, there is no credib Ilatory scheme world- bility standard for pla	supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device are reason to believe that the unavoidable impurity counted.	and, to the bes	t of Microchip the chemical s	Technology		Doped Silicon	7440-21-3 Total	100	
ranties provided by Microchip Technology Incorporated and in provided in Microchip's standard terms and conditions of sale. These are provided in management in Microchip's quotations, 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)  Tin 7440-31-5 100.00	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance 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, is not below the threshold of regulatory concern for any regulding compounds used by Microchip meet the UL94 V0 flamma o://ul.com/global/eng/pages/offerings/industries/chemicals/plase protective "tubes" in which the specific product is shipped ar	ernal design controls il substance is NOT al ent, there is no credib ilatory scheme world- bility standard for pla stics/	supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device allowed to be reason to believe that the unavoidable impurity columbia.  Stics. You can access the UL iQTM family of database.	and, to the bes neentration of es to obtain a t	t of Microchip the chemical s est report at	Technology substance, if		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
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)  Tin 7440-31-5 100.00  Tin 7440-31-5 100.00	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance 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, is not below the threshold of regulatory concern for any regulding compounds used by Microchip meet the UL94 V0 flammap://ul.com/global/eng/pages/offerings/industries/chemicals/plase protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in the completeness and accuracy of data in this form because it has polier information is often protected from disclosure as trade somation is provided only as estimates of the average weight of	ernal design controls al substance is NOT al ent, there is no credib latory scheme world- bility standard for pla stics/ e made from polyviny is form concerning st f its knowledge and b s been compiled base ecrets and some infoi t these parts and the	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device the reason to believe that the unavoidable impurity columbia.  It chloride (PVC) plastic. "Window envelopes" used to be the columbia to the columbi	and, to the best contration of the sto obtain a to hold the packary Incorporated including licens and the state of the sta	t of Microchip the chemical s est report at ting slip on the d's semicondu orated canno y raw material d raw material	Technology substance, if e outer box ector devices t guarantee 1 suppliers. I suppliers.		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
Total 100.00	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance 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, is not below the threshold of regulatory concern for any regulding compounds used by Microchip meet the UL94 V0 flammap://ul.com/global/eng/pages/offerings/industries/chemicals/plase protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  Prochip Technology Incorporated believes the information in the cheir original packing materials is true and correct to the best of completeness and accuracy of data in this form because it has polier information is often protected from disclosure as trade soft information is provided only as estimates of the average weight of lude trace levels of dopants, metals, and non-metal materials corrochip Technology Incorporated does not provide any warrant trranties provided by Microchip Technology Incorporated and its transfer and the provided by Microchip Technology Incorporated and its provided and its transfer and the provided by Microchip Technology Incorporated and its provided by M	ernal design controls al substance is NOT al ent, there is no credib latory scheme world- bility standard for pla stics/ e made from polyviny is form concerning su f its knowledge and b s been compiled base ecrets and some info these parts and the ontained within silico y, express or implied, s subsidiaries are cor	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device it reason to believe that the unavoidable impurity counties.  It chloride (PVC) plastic. "Window envelopes" used to abstances restricted by RoHS in Microchip Technologielief, as of the date listed in this form.	and, to the best occurration of the best obtain a to hold the packing incorporated incorporated incorporated provided by assemblers an acomponents.	t of Microchip the chemical s est report at ting slip on the d's semicondu orated canno y raw material These estimat clusive, limite	Technology substance, if e outer box ector devices a guarantee suppliers. I suppliers. es do not d product	0.17	(mg) Total  Doped Gold	7440-21-3  Total  Wire Bond  7440-57-5  Total	100 100.00 100.00 % of Total Weight 100 100.00	0.15
	ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via intercept of the composition of the chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this docume, is not below the threshold of regulatory concern for any regulding compounds used by Microchip meet the UL94 V0 flammal or://ul.com/global/eng/pages/offerings/industries/chemicals/plase protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  Prochip Technology Incorporated believes the information in the heir original packing materials is true and correct to the best or completeness and accuracy of data in this form because it has opilier information is often protected from disclosure as trade somation is provided only as estimates of the average weight of lude trace levels of dopants, metals, and non-metal materials corrochip Technology Incorporated does not provide any warrant rirenties provided by Microchip Technology Incorporated and its prochip's quotations, sales order acknowledgement, and invoice reachip's quotations and duty to notify users of updates or change	ernal design controls al substance is NOT al ent, there is no credib allatory scheme world- bility standard for pla stics/ e made from polyviny is form concerning st if its knowledge and b s been compiled base ecrets and some info if these parts and the a ontained within silico y, express or implied, s subsidiaries are cor es. es to Material Content	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device the reason to believe that the unavoidable impurity conside.  It chloride (PVC) plastic. "Window envelopes" used to a chloride (PVC) plastic. "Window envelopes" used to a chloride (PVC) plastic. "Window envelopes" used to a chloride (PVC) plastic as of the date listed in this form. Microchip Technologielief, as of the date listed in this form. Microchip Technologielief, as of the date listed in this form. Microchip Technologielief, as of the date listed in Material Safety Data She mation may not have been provided by subcontract average weight of anticipated significant toxic metals in devices (silicon IC) in the finished parts.  With respect to the information provided in this declaration in Microchip's standard terms and conditions.  Declarations and shall not be liable for any damages.	and, to the best occurration of the set of obtain a to be hold the packet of the set of	t of Microchip the chemical s est report at ting slip on the d's semicondu orated canno y raw material d raw material These estimat clusive, limite are provided	Technology substance, if e outer box ector devices t guarantee I suppliers. I suppliers. I suppliers do not e d product in ential or	0.17	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 hour	100 100.00 100.00 % of Total Weight 100 100.00 % of Total Weight	0.15

DB 3 SOT-23 10:31 AM : 5/6/2014

AICROCHIP				nation Base A	- ,		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg Labeling e3
Semiconductor Device Ty	e: DC 05 (Lead) SC	OT-223 (N7)								
·	<u> </u>	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	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		
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		
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		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5 Plating o	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	8.010	1.322	80,100		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	16.500	1,000,000	Proprietar	Curing agent & Hardener	Trade Secret	3	
	0.0165 g To	tal Mass						Total	100.00	
s semiconductor device and its homogenous materials comp ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	y with EU Directive 2002/95	/EC (RoHS Directive), EU Directive 2011/65/	EU (RoHS Reca	ast Directive) a	and with EU	0.17	Total (mg)	Chip (Die)	% of Total Weight	1.03
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). mpliance with the above EU Directives has been verified via in	ternal design controls, sup	plier declarations, and /or analytical test dat	а.	ŕ		0.17	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3 Total	100	1.03
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ternal design controls, sup al substance is NOT an inte of this document, there is no	plier declarations, and /or analytical test dat intional ingredient in the semiconductor dev credible reason to believe that the unavoid	a. rice and, to the	best of Micro	chip	0.17		7440-21-3	100	1.03
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic chology incorporated's knowledge and belief as of the date of	ternal design controls, supplated in the substance is NOT an inte of this document, there is no bry concern for any regulated ability standard for plastics.	plier declarations, and /or analytical test dat entional ingredient in the semiconductor dev credible reason to believe that the unavoid ory scheme world-wide.	a. rice and, to the able impurity o	best of Micro	chip of the	0.17		7440-21-3	100	0.55
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic chology incorporated's knowledge and belief as of the date certain substance, if any, is not below the threshold of regulate lding compounds used by Microchip meet the UL94 V0 flamm	ternal design controls, supplied in the substance is NOT an interest of this document, there is no by concern for any regulate ability standard for plastics.	plier declarations, and /or analytical test dat entional ingredient in the semiconductor devolved in the credible reason to believe that the unavoid by scheme world-wide.  You can access the UL iQTM family of data	a. vice and, to the lable impurity of the bases to obtain	best of Micro concentration	chip of the at		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic thology incorporated's knowledge and belief as of the date demical substance, if any, is not below the threshold of regulate Iding compounds used by Microchip meet the UL94 V0 flammp://ul.com/global/eng/pages/offerings/industries/chemicals/plase protective "tubes" in which the specific product is shipped as	aternal design controls, supplied in the substance is NOT an interest of this document, there is no bory concern for any regulate ability standard for plastics. In the standard for plastics of the substance of	plier declarations, and /or analytical test dat entional ingredient in the semiconductor devocredible reason to believe that the unavoidory scheme world-wide.  You can access the UL iQTM family of data bride (PVC) plastic. "Window envelopes" us not esserticted by RoHS in Microchip Techr d belief, as of the date listed in this form. Mompiled based on the ranges provided in Mets and some information may not have been of these parts and the average weight of ani	a.  ice and, to the able impurity of the able impur	best of Micro- concentration  n a test report  packing slip o  rated's semicology Incorpo-  pata Sheets pr  subcontract a  icant toxic me	chip of the  at  n the outer  onductor rated ovided by ssemblers tals		Doped 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).  Impliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemical notice of the date of th	aternal design controls, supplied in the state of this document, there is no by concern for any regulate ability standard for plastics. In the standard for plastics is tics.  In the made from polyvinyl chlows in the best of its knowledge and form because it has been to midisclosure as trade secrates of the average weight and the standard mon-metal inty, express or implied, with ted and its subsidiaries are	plier declarations, and /or analytical test dat entional ingredient in the semiconductor devocation of the control of the cont	a.  ice and, to the able impurity of the able impurity of the able impurity of the able impurity of the able in a black of the able in a	best of Micro concentration  n a test report  packing slip o  rated's semicology incorpo  Subcontract a  icant toxic me  te finished par	chip of the  at  n the outer  anductor rated ovided by ssemblers tals ts.  mited		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via in chemical substance is absent from the list above, the chemic chnology Incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulate Iding compounds used by Microchip meet the UL94 V0 flammo://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped at and certain "reels" may be made from PVC plastic.  Prochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to anot guarantee the completeness and accuracy of data in this material suppliers. Supplier information is often protected for arw material suppliers. Information is provided only as estimponents. These estimates do not include trace levels of doperochip Technology Incorporated does not provide any warranduct warranties provided by Microchip Technology Incorporated dout in the control of the complete in the c	aternal design controls, supplied in the substance is NOT an interest of this document, there is no processory concern for any regulate ability standard for plastics, stics/  are made from polyvinyl chloring form concerning substante best of its knowledge and form because it has been come disclosure as trade secrets of the average weight ants, metals, and non-metal wity, express or implied, with ted and its subsidiaries are roices.	plier declarations, and /or analytical test dat intional ingredient in the semiconductor device redible reason to believe that the unavoidory scheme world-wide.  You can access the UL iQTM family of data bride (PVC) plastic. "Window envelopes" us nees restricted by RoHS in Microchip Techrid belief, as of the date listed in this form. Mompiled based on the ranges provided in Mets and some information may not have been of these parts and the average weight of an materials contained within silicon devices (respect to the information provided in this contained in Microchip's standard terms an arations and shall not be liable for any damarations are shall not be liable for any damarations and shall not be liable for any damarations are shall not be liable for any damarations and shall not be liable for any damaratic l	a.  vice and, to the able impurity of the able impu	best of Microconcentration  n a test report  packing slip o  rated's semicology Incorpo  pata Sheets pr  subcontract a  icant toxic me  ee finished par  ee exclusive, li  f sale. These a  indirect, cons	chip of the  at  In the outer  anductor rated ovided by ssemblers tals ts.  mited are provided equential or	0.09	Doped 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	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.55

DC 5 SOT-223 10:31 AM : 5/6/2014

ICROCHIP				nation Base A pper Alloy (C	•		•	ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: OS 05 (Lead									e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	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	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			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:  Total Mass	100.000	12.800	1,000,000	Proprietary	Curing agent & Hardener	Trade Secret Total	3 100.00	
, , , ,	-	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (	(RoHS Recast	Directive) and	with EU	0.68	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	5.34
pliance with the above EU Directives has been verified via in the mical substance is absent from the list above, the chemic	ternal design controls	s, supplier declarations, and /or analytical test data.  n intentional ingredient in the semiconductor device	and, to the be	est of Microchi	p	0.68	,		100	5.34
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  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  tance, if any, is not below the threshold of regulatory concer  ing compounds used by Microchip meet the UL94 V0 flamma  //ul.com/global/eng/pages/offerings/industries/chemicals/pla	ternal design controls al substance is NOT a f this document, there rn for any regulatory s ability standard for pla	s, supplier declarations, and /or analytical test data.  n intentional ingredient in the semiconductor device b is no credible reason to believe that the unavoidable cheme world-wide.	and, to the be e impurity con	st of Microchi centration of t	p the chemical	0.68	,	7440-21-3	100	
pliance with the above EU Directives has been verified via in the mical substance is absent from the list above, the chemical substance is absent from the list above, the chemical nology incorporated's knowledge and belief as of the date o tance, if any, is not below the threshold of regulatory concer ing compounds used by Microchip meet the UL94 V0 flamma	ternal design controls al substance is NOT a f this document, there rn for any regulatory s ability standard for pla stics/	is, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable incheme world-wide.  Instics. You can access the UL iQTM family of database.	and, to the be e impurity con ses to obtain a	st of Microchi centration of t test report at	p the chemical		Doped Silicon	7440-21-3 Total	100	
poliance with the above EU Directives has been verified via in the hemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of tance, if any, is not below the threshold of regulatory concerting compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/pla	ternal design controls al substance is NOT a f this document, there rn for any regulatory s ability standard for pla stics/	is, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable incheme world-wide.  Instics. You can access the UL iQTM family of database.	and, to the be e impurity con ses to obtain a	st of Microchi centration of t test report at	p the chemical		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
poliance with the above EU Directives has been verified via in the hemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of tance, if any, is not below the threshold of regulatory concerting compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/pla	ternal design controls al substance is NOT a f this document, there rn for any regulatory s ability standard for pla stics/  are made from polyving his form concerning si he best of its knowled locause it has been cor e as trade secrets and ge weight of these par	in, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device its no credible reason to believe that the unavoidable incheme world-wide.  Instics. You can access the UL iQTM family of database of the control of	and, to the be e impurity con ses to obtain a to hold the pace gy Incorporate chip Technoloty Data Sheets ubcontract assoxic metals coxic metals cox	est of Microchi centration of the test report at cking slip on the ed's semicond gy Incorporat s provided by semblers and i	p the chemical he outer box luctor ed cannot raw material raw material		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical place of the date of	ternal design controls al substance is NOT a if this document, there rn for any regulatory s ability standard for pla stics/ are made from polyving the best of its knowled acause it has been cor as trade secrets and ge weight of these par ametal materials conti	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  Instics. You can access the UL iQTM family of database yill chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safe some information may not have been provided by sits and the average weight of anticipated significant that ained within silicon devices (silicon IC) in the finished, with respect to the information provided in this dec	and, to the be e impurity con ses to obtain a to hold the pace gy incorporate chip Technolo ty Data Sheet ubcontract ass oxic metals co d parts.	est of Microchi centration of the test report at cking slip on the ed's semicond gy Incorporate s provided by semblers and the proponents. The	p the chemical he outer box luctor ed cannot raw material raw material lesse		Doped Silicon  (mg) Total  Doped Gold	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
poliance with the above EU Directives has been verified via in the mical substance is absent from the list above, the chemical substance is absent from the list above, the chemical recomposition of the list above, the chemical substance, if any, is not below the threshold of regulatory concerting compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/placorotective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic.  The product is shipped above the information in the sin their original packing materials is true and correct to the liers. Supplier information is often protected from disclosure liers. Information is provided only as estimates of the averagates do not include trace levels of dopants, metals, and non suchip Technology Incorporated does not provide any warrantinties provided by Microchip Technology Incorporated and interesting the such as a suc	ternal design controls al substance is NOT a if this document, there rn for any regulatory s ability standard for pla stics/ are made from polyvin; are made from polyvin; anis form concerning si he best of its knowled acause it has been cor a sa trade secrets and ge weight of these par amental materials conti- aty, express or implied ts subsidiaries are co- ces.  es to Material Content ers' reliance on the inf	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  Instics. You can access the UL iQTM family of database yellow the cheme world-wide.  In it is in the control of the cheme world-wide in the control of the cheme world-wide.  In it is in the cheme world-wide in the cheme world-wide in the cheme world-wide in the form. Micrompiled based on the ranges provided in Material Safe some information may not have been provided by sits and the average weight of anticipated significant the provided within silicon devices (silicon IC) in the finished within silicon devices (silicon IC) in the finished with the contained in Microchip's standard terms and conditions to be clearations and shall not be liable for any damage	and, to the be e impurity con ses to obtain a to hold the pace of	est of Microchi centration of the test report at cking slip on the ed's semicond gy Incorporate is provided by semblers and the proponents. The exclusive, limite are provided	p the chemical he outer box luctor ed cannot raw material raw material lesse led product d in uential or	0.05	Doped 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	100 100.00 % of Total Weight 100	0.4
pliance with the above EU Directives has been verified via in nemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical place of the date of	ternal design controls al substance is NOT a if this document, there rn for any regulatory s ability standard for pla stics/ are made from polyvin; are made from polyvin; anis form concerning si he best of its knowled acause it has been cor a sa trade secrets and ge weight of these par amental materials conti- aty, express or implied ts subsidiaries are co- ces.  es to Material Content ers' reliance on the inf	in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable cheme world-wide.  Instics. You can access the UL iQTM family of database yellow the cheme world-wide.  Instics and the control of the cheme world-wide in the form. Micrompiled based on the ranges provided in Material Safe some information may not have been provided by sits and the average weight of anticipated significant the aliened within silicon devices (silicon IC) in the finished with the contained in Microchip's standard terms and conditions to be clearations and shall not be liable for any damage.	and, to the be e impurity con ses to obtain a to hold the pace of	est of Microchi centration of the test report at cking slip on the ed's semicond gy Incorporate is provided by semblers and the proponents. The exclusive, limite are provided	p the chemical he outer box luctor ed cannot raw material raw material lesse led product d in uential or	0.05	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 hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.4

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ICROCHIP Semiconductor Device Typ	e: LB 03 (Lead)	SC-70 (B2 / BJ)		nation Base A pper Alloy (C	-		-	ogeneous 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	malnart	ppm	4.39	(mg) Total	Mold Compound	% ot Total Weight	37.38
Silica, vitreous	60676-86-0	Mold Compound	67.830	mg/part 3.731	678.300		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.269	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.269	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.108	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.013	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.221	0.562	102,209			Total	100.00	
Iron	1309-37-1	Lead Frame	0.247	0.014	2,468	0.58	(mg) Total	Lead Frame	% of Total Weight	5.68
Zinc	7440-66-6	Lead Frame	0.013	0.001	131		Copper	7440-50-8	97.34	
Phosphate	7723-14-0	Lead Frame	0.009	0.000	87		Iron	1309-37-1	2.35	
Silver	7440-22-4	Lead Frame	0.008	0.000	84		Zinc	7440-66-6	0.13	
Chromium	7440-47-3	Lead Frame	0.001	0.000	11		Phosphate	7723-14-0	0.08	
Lead	7439-92-1	Lead Frame	0.001	0.000	11		Silver	7440-22-4	0.08	
Cadmium Silver (Ag)	7440-43-9 7440-22-4	Lead Frame	0.000	0.000	5.888		Chromium	7440-47-3 7439-92-1	0.01 0.01	
Proprietary Resin	Trade Secret	Die Attach Die Attach	0.589 0.139	0.032	1,388		Lead Cadmium	7439-92-1 7440-43-9	0.01	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.139	0.008	225		Caumum	Total		
Silicon	7440-21-3	Chip (Die)	7.500	0.413	75,000	0.04	(mg) Total	Die Attach	% of Total Weight	0.51
Gold	7440-57-5	Wire Bond	0.200	0.011	2.000	0.04	Silver (Ag)	7440-22-4	79	0.51
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.069	12,500		Proprietary Resin	Trade Secret	19	
1111	7440-31-3	TOTALS:	100.000	5.500	1,000,000	Proprietar	y Curing agent & Hardener	Trade Secret	3	
	0.0058	g Total Mass			1,000,000	1 Tophotai	) Carring agont a maraonori	Total		
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).				ecast Directive	e) and with	0.41	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	0.51
semiconductor device and its homogenous materials compl rective 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 chemic nology Incorporated's knowledge and belief as of the date of	ternal design control al substance is NOT a f this document, ther	s, supplier declarations, and /or analytical test on an intentional ingredient in the semiconductor or the intentional ingredient in the semiconductor or the intentional ingredient in the unaverse is no credible reason to believe that the unaverse is no credible reason to believe that the unaverse is no credible reason to believe that the unaverse is no credible reason to be in the intention of	data. device and, to t	the best of Mic	rochip	0.41	1		100	0.51
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  diance with the above EU Directives has been verified via in  memical substance is absent from the list above, the chemic  nology Incorporated's knowledge and belief as of the date o  ical substance, if any, is not below the threshold of regulate  ng compounds used by Microchip meet the UL94 V0 flamma  ful.com/global/eng/pages/offerings/industries/chemicals/pla	ternal design control al substance is NOT a f this document, ther ry concern for any re ability standard for pl stics/	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of a no credible reason to believe that the unavergulatory scheme world-wide.	data. device and, to to oidable impurit atabases to ob	the best of Mic by concentration	crochip on of the ort at	0.41	1	7440-21-3	100	0.51
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Dilance with the above EU Directives has been verified via in  nemical substance is absent from the list above, the chemic	ternal design control al substance is NOT a f this document, ther ry concern for any re ability standard for pl stics/	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of a no credible reason to believe that the unavergulatory scheme world-wide.	data. device and, to to oidable impurit atabases to ob	the best of Mic by concentration	crochip on of the ort at		Doped Silicon	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
irective 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 chemic nology Incorporated's knowledge and belief as of the date o ical substance, if any, is not below the threshold of regulate ng compounds used by Microchip meet the UL94 V0 flamma /ul.com/global/eng/pages/offerings/industries/chemicals/pla orotective "tubes" in which the specific product is shipped a	ternal design control al substance is NOT a f this document, ther ry concern for any re ability standard for pl stics/ re made from polyvir alis form concerning s he best of its knowled form because it has I m disclosure as trad nly as estimates of th	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of e is no credible reason to believe that the unavegulatory scheme world-wide.  astics. You can access the UL iQTM family of death of the control	data.  device and, to to oidable impurite atabases to observed to hold the chnology Incorrow Microchip Tec Material Safet been provided if the weight of an incorrowided if the weight of an incorrowing	the best of Mic by concentration tain a test reponse packing slip porated's sem chology Incory Data Sheets by subcontracticipated signi	crochip on of the ort at on the iconductor porated provided by it ficant toxic		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond	100 100.00 % of Total Weight	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Diance with the above EU Directives has been verified via in memical substance is absent from the list above, the chemic mology Incorporated's knowledge and belief as of the date of ical substance, if any, is not below the threshold of regulate mg 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 box and certain "reels" may be made from PVC plastic.  The provided of the information in the sin their original packing materials is true and correct to to the guarantee the completeness and accuracy of data in this material suppliers. Supplier information is often protected fro mblers and raw material suppliers. Information is provided o	ternal design control al substance is NOT : If this document, ther rry concern for any re ability standard for pl stics/ re made from polyvir his form concerning s he best of its knowled form because it has i had disclosure as trad hily as estimates of the ford dopants, metals, a ty, express or implied ed and its subsidiari-	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of the is no credible reason to believe that the unaverage of the intentional ingredient in the semiconductor of the intentional ingredient in the unaverage of the intentional intent	data.  device and, to to oldable impurit atabases to observed to hold the chnology Incorr. Microchip Tec and Material Safet been provided lige weight of amig devices (siliconis declaration.	the best of Mic ty concentration tain a test reported in a test in a t	crochip on of the ort at on the iconductor porated provided by it ficant toxic nished parts.		Doped Silicon  (mg) Total  Doped Gold	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Diance with the above EU Directives has been verified via in memical substance is absent from the list above, the chemic mology Incorporated's knowledge and belief as of the date o ical substance, if any, is not below the threshold of regulate mg 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 box and certain "reels" may be made from PVC plastic.  Inchip Technology Incorporated believes the information in the se in their original packing materials is true and correct to to to guarantee the completeness and accuracy of data in this material suppliers. Supplier information is often protected from hers and raw material suppliers. Information is provided o is components. These estimates do not include trace levels  chip Technology Incorporated does not provide any warrantic twarranties provided by Microchip Technology Incorpora	ternal design control al substance is NOT a f this document, ther ry concern for any re ability standard for pl stics/ re made from polyvir alis form concerning s ne best of its knowled form because it has l m disclosure as trad nly as estimates of the of dopants, metals, a ty, express or implied ted and its subsidiari att, and invoices.  es to Material Conter users' reliance on the	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of the is no credible reason to believe that the unaverage declarations are sent to be	data.  device and, to to oldable impurity atabases to observed to hold the chnology Incorromagnet of the chnology Incorromagne	the best of Mic ty concentration tain a test reported by the packing slip porated's semi- thhology Incor y Data Sheets by subcontracticipated signi- on IC) in the fir The exclusive s of sale. Thes	crochip on of the ort at on the iconductor reporated provided by it ficant toxic nished parts. it, limited we are	0.01	Doped 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	100 100.00 % of Total Weight 100 100.00 % of Total Weight	3

LB 3 SC-70 10:32 AM : 5/6/2014

receive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  1.51 Iotal (mg) Cinp (bite) % of Iotal weight use protected (mg) as a 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 chnology 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 bastance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  3.68 (mg) Total Wire Bond (mg) Total (mg) (mg) (mg) (mg) Total (mg) (mg) Total (mg) (mg) Total (mg) (mg) (mg) Total (mg) (mg) (mg) (mg) (mg) (mg) (mg) (mg)	Saick Substance	MICROCHIP  Semiconductor Device Type	e: TO and ZB (	03 (Lead) <b>TO-92</b> (A2 / AU)		nation Base A pper Alloy (C	•		•	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Silts   Microsope   Society   Soci	Sites   Mean   100   Mean   1	Basic Substance	CAS Number			mg/part	ppm	114.11	(mg) Total	Mold Compound	% ot Total Weight	56.77
Ecos Rosal No Informinory Insolation (Part School). No Austrianny Insolation (Part School). No Insolation (Part School).	Promotice Research   Southernoory (condoct)   Trains Second   Model Compround   3,477   6,989   34,772   7,089   7,000   7,0			•	_				Silica vitreous	60676-86-0	85.00	1
Private   Priv	Persist Resear   Pkg Br CL   SEON, Not disarratinny reposals   Total Secret   Moli Compound   3,477   6,598   34,772   1,500											il
Carbon Black   1333-86-4   Mobil Compound   0.170   0.342   7.703   0.300   Copper   7.440-50-5   Leaf Farme   30,005   7.620   9.530   Compound   7.440-50-5   Leaf Farme   0.005   7.620   9.530   Compound   7.440-50-5   Compound	Column   State   1333-864   Modi Compound   0.170   0.342   1,703			Mold Compound	3.477	6.989	34,772		Phenolic Resin	Trade Secret	6.13	d
Copper	Copper	Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.391	2.796	13,909		Epoxy, Cresol Novolac	29690-82-2	2.45	il
Silver 7,4402-24 Lead Frame 0.758 1.820 9.353 80.00 (mg) Total Lead Frame 1.758 1.224 7.752 1.255 1.252 1.752 1.255 1.252 1.752 1.255 1.252 1.752 1.255 1.255 1.252 1.255 1.252 1.255 1.252 1.255 1.252 1.255 1.255 1.252 1.255 1.252 1.255 1.25	No.   14/39/896   Lood Frame   0.785   1.890   9.383   8.080   mg  Total   Lood Frame   3.845   3.424   7.562   Copport 7.440-55-5   0.5654   2.765	Carbon Black	1333-86-4	Mold Compound	0.170	0.342	1,703		Carbon Black	1333-86-4	0.30	il
Silver 744-02-24 Lead Frame 0.059 0.100 488	Sherr	Copper	7440-50-8	Lead Frame	38.024	76.428	380,239			Total	100.00	•
Procedure   Proc	Trick	Iron	7439-89-6	Lead Frame	0.935	1.880	9,353	80.00	(mg) Total	Lead Frame	% of Total Weight	39.8
Phosphorous   7723-14-0   Lead Frame   0.033   0.066   1328   Silver   7440-24-1   191   Phosphorous   7723-140   0.04   100   100   Phosphorous   7723-140   0.04   100	Phosphorous	Silver	7440-22-4	Lead Frame	0.758	1.524	7,582		Copper	7440-50-8	95.54	i
Silver 7440-92-4 Die Attoch 0.066 0.134 6694 Epoxy Rein 1903-356-5 Dia Attoch 0.017 0.034 1690 Prepared to 1903-056-5 Dia Attoch 0.017 0.034 1690 Prepared to 1903-056-5 Dia Attoch 0.006 0.011 57 Dia Attoch 1.006 0.017 0.007 Dia Attoch 1.006 Dia Dia Attoch 1.006 Dia	Silver (7440-22-4 De Attach 0.066 0.134 664 Epox Period (7400-22-4) (100 0.066 0.134 664 Period (7400-22-4) (100 0.134 Period (7400-22-4) (1	Zinc			0.050	0.100					2.35	d
Epocy Resin   9033-96.5   Die Attach   0.017   0.034   169	Expoys Resin   \$003-26-5   Die Attach   \$0.017   \$0.004   169	Phosphorous	7723-14-0	Lead Frame	0.033	0.066	328		Silver	7440-22-4	1.91	d
Heavy heprotyleydydy ether 93468 Die Attach 0,006 0,011 57 Phenolic handerer 92488 Die Attach 0,000 0,001 3 Bluty closlosolve acetate 112-07-2 Die Attach 0,000 0,001 7 Silicon 774-07-13 Chip (Die) 0,800 1,608 8,000 Th 174-07-13 Chip (Die) 0,800 1,608 8,000 Th 174-07-15 Pharty melantial between the state of the state	H-But priemy glycody ether   3101-60-8   Die Attach   0.006   0.011   57   Total   100.00    But cellosadve acctate   112,07-2   Die Attach   0.001   0.001   7   Silcon   7440-21-3   Chip (Die)   0.001   0.001   7   Silcon   7440-21-3   Chip (Die)   0.001   0.001   7   Total   7440-21-3   Total   0.001   0.001   7   Total   7440-21-3   Total   0.001   0.001   7   Total   0.001   0.001   7   0.001   0.001   7   0.001   0.001   7   0.001   0.001   7   0.001   0.001   7   0.001   0.001   0.001   0.001   7   0.001	Silver	7440-22-4	Die Attach	0.066	0.134	664		Zinc	7440-66-6	0.13	i
Phenoic hardener 92-88-6 Dia Attach 0,000 0,001 3 0,18 (mg) Total Weight 0,090 mode)  Butyl collosobre pacitary 12-17-7 Dia Attach 0,001 0,001 7 0	Phenolic harderier 92-88 De Attach 0.000 0.001 3 0.18 (mg) Total Die Attach 0.001 Actach 0.001 7 4 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	Epoxy Resin	9003-36-5	Die Attach	0.017	0.034	169		Phosphorous	7723-14-0	0.08	d
Burly Cellosohe accesse 112-07-2 Die Attach 0.001 7.0001 7.0001 7.0001 7.0001 7.0001 7.0001 7.0001 7.0001 7.0001 7.0001 7.0001 7.0001 7.0001 7.0001 7.0001 7.00000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.00000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.00000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.00000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.0000 7.00000 7.00000 7.	Buty collocative acetate 112-07-2   Die Attach   0.001   7.001	t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.006	0.011	57			Total	100.00	•
Silicon 7440:21:3 Chip (Dile) 0.380 1.688 8.000 Expression 1.000 1.0880 4.00 1	Gold 7440:21-3 Chip (Dispose a large and part of the complete and the control of the complete and the comple	Phenolic hardener	92-88-6	Die Attach	0.000	0.001	3	0.18	(mg) Total	Die Attach	% of Total Weight	0.09
Silicon 7440:21:3 Chip (Dile) 0.380 1.688 8.000 Expression 1.000 1.0880 4.00 1	Silicon 7,440:21-3   Chip (Dia) 0.890 1.698 8.000   Epony Resin 9003-36-5 19   Europe product shadow provided in this form because it has been completed based on the ranges provided in Material Safety Data Shees provided by subcortact acomption provided only as estimates on the information is provided only as estimates of ord included race (Honology Incorporated does not provide any warranty, express or implied, with respect to the information is provided only as estimates or of the order to describe a substance or this Certificate of Compliance of the Certificate of Compliance for semiconductor fevere and the contraction of the chemical substance is Not an intentional ingredient in the semiconductor device and to the best of Microchip and the compliance of the chemical substance is sheen if one of the date of this document, there is no cerdible reason to believe that the unavoidable impurity concentration of the chemical substance is Not an intentional ingredient in the semiconductor device and to the best of Microchip and the complete of the date of this document, there is no cerdible reason to believe that the unavoidable impurity concentration of the chemical substance is shore of the date of this document, there is no cerdible reason to believe that the unavoidable impurity concentration of the chemical substance is shore of the date of this document, there is no cerdible reason to believe that the unavoidable impurity concentration of the chemical substance is shore of the date of this document, there is no cerdible reason to believe that the unavoidable impurity concentration of the chemical substance is a story of the date of this document, there is no cerdible reason to believe that the unavoidable impurity concentration of the chemical substance is not the date of the date of this date its story of the certificate of the certificate of the	Butyl cellosolve acetate	112-07-2	Die Attach	0.001	0.001	7		Silver	7440-22-4	74	i
Gold 7440-51-5 Wine Bond 1 7440-51-5 Wine Bond 2 7440-51-5 Wine Bond 2 7440-51-5 Wine Bond 3 7440-51-5 Wine Bond 2 7440-51-5 Wine Bond 3 7440-51-5 Wine Bond 2 7440-51-5 Wine Bond 3 7440-51-5 Wine Bo	Fin 17440-31-5   Puregree network place   1440-31-5   Puregree network with general to 1970-198   1980   19											i
Tin 7440-31-5 Pitergo celement leads (pere). Mains The Javanovity of ToTALS: 10000 201.000 1,000,000 1,000,000 1,000,000 1,000,000	Tin 17440-31-5 Plating meternal bases (procedure) 17440-31-5 Plating											d
O.2010 g Total Mass  Is semiconductor device and its homogenous materials comply with EU Directive). EU Directive) EU Directive 2002/95/EC (RoHS Directive), EU Directive 2002/95/EC (RoHS Directive), EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/95/EC (RoH-Or-Life Vehicles (ELV) Directive).  In chemical substance is absent from the list above, the chemical substance is not bear of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance is a basent from the list above, the chemical substance is a basent from the list above, the chemical substance is not recible reason to believe that the unavoidable impurity concentration of the chemical substance is a basent from the list above, the chemical substance is not recible reason to believe that the unavoidable impurity concentration of the chemical substance is a basent from the list above, the chemical substance is not recible reason to believe that the unavoidable impurity concentration of the chemical substance is not recible reason to believe that the unavoidable impurity concentration of the chemical substance is not recible reason to believe that the unavoidable impurity concentration of the chemical substance is not recible reason to believe that the unavoidable impurity concentration of the chemical substance is not recible reason to believe that the unavoidable impurity concentration of the chemical substance is not recible reason to be substance is not recible the substance	D.2010 g Total Mass  O.2010 g							,				d
O.2010 g Total Mass  O.2010 g Total Mass  O.2010 g Total Mass  O.2016 g	O.2010 g Total Mass  O.2015 G	1111	1440 01 0								1	d
is semiconductor device and its homogenous materials comply with EU Directive 2002/35/EC (RoHS Directive), EU Directive 2002/35/EC (RoHS Directive) and with EU  1.51 Total (mg)  Chip (Die)  4.67 Total Weight  5.08  Chip (Die)  4.67 Total Weight  5.08  Chip (Die)  4.67 Total Weight  5.08  Chip (Die)  5.09  6.08  Chip (Die)  5.09  6.08  Chip (Die)  6.09	his semiconductor device and its homogenous materials comply with EU Directive 2002/59/EC (RoHS Directive), EU Directive) and with EU Directive 2002/59/EC (RoHS Directive) and with EU Directive 2002/59/EC (RoHS Directive) and with EU Directive 2002/59/EC (RoHS Directive), EU Directive) and with EU Directive 2002/59/EC (RoHS Directive) and with the expectation of the directive 2002/59/EC (RoHS Directive) and with the expectation of the directive 2002/59/EC (RoHS Directive) and with the expectation of the directive 2002/59/EC (RoHS Directive) and with the expectation of the directive 2002/59/EC (RoHS Directive) and with the expectation of the directive 2002/59/EC (RoHS Directive) and with the expectation of the directive 2002/59/EC (RoHS Directive) and violation of the directive 2002/59/EC (RoHS Direc		0.2010				1,000,000		Datyr concourt acctate		100 00	1
batance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.	Alloding compounds used by Microchip meet the UL34 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at thttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/  Interpreter tive "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 certain "reels" may be made from PVC plastic.  Idicrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated cannot judgrantee the completeness and accuracy of data in this form because it has been compiled based on the Material Safety Data Sheets provided by awa material juppliers. Supplier information is provided only as estimates of the average weight of these parts and the average weight of these parts and the average weight of these parts and the average weight of anticipated significant toxic metals components. These ustimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Alicrochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip 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 standard terms and conditions of sale. These are provided 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 s	lirective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  compliance with the above EU Directives has been verified via int a chemical substance is absent from the list above, the chemica	ernal design contro	ls, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device	and, to the be	st of Microchi	p	1.61	-	7440-21-3	100	
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 vices 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 arantee the 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 ppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material ppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These timates do not include trace levels of 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 trranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in crochip's quotations, sales 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 trranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in an accordance of the provided in this declaration. The exclusive, limited product trranties provided in the substitution of sale. These are provided in the substitution of sale. These are provided in the substitution of sale. These are	Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices 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 purarantee the completeness and accuracy of data in this form because it has been complied based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These stemates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Microchip Technology Incorporated does not provided any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties 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 quotations, sales order acknowledgement, and invoices.  Tin 7440-31-5 100.00  Tin 100.00  Total Weight 2.5  Total 100.00	ubstance, if any, is not below the threshold of regulatory concert folding compounds used by Microchip meet the UL94 V0 flamma ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plas	n for any regulatory bility standard for p stics/	scheme world-wide. lastics. You can access the UL iQTM family of databa	ses to obtain a	test report at		0.08	1			0.04
trochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor vices 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 arantee the 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 ppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These timates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  **Corochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product trranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in corochip's quotations, sales order acknowledgement, and invoices.  **Corochip 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  **Tin**  Total**  100.00  **Total**  100.	Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor levices 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 purarantee the 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 suppliers. Supplier 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 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 of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties 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 quotations, sales order acknowledgement, and invoices.  5.03 (mg) Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for / 1 hour / 1		e made nom poryvi	Tyronoriae (1 10) plastic. William envelopes asea	to note the par	orang onp on a	ic outer box		Doped Gold	7440-57-5	100	ı
terochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in Mis declaration. The exclusive, limited product ruranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Society of the content	Microchip Technology Incorporated aces not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties 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 quotations, sales order acknowledgement, and invoices.  Microchip 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 otherwise, 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  Tin 7440-31-5 100.00  Total 100.00	levices in their original packing materials is true and correct to the uarantee the completeness and accuracy of data in this form bei uppliers. Supplier information is often protected from disclosure uppliers. Information is provided only as estimates of the average	ne best of its knowle cause it has been co as trade secrets an e weight of these pa	dge and belief, as of the date listed in this form. Micro ompiled based on the ranges provided in Material Saf d some information may not have been provided by s orts and the average weight of anticipated significant	ochip Technolo ety Data Sheet subcontract ass toxic metals co	egy Incorporate s provided by s semblers and r	ed cannot raw material raw material			Total	100.00	•
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  Tin 7440-31-5 100.00  Tin 7440-31-5 100.00	otherwise, 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    Tin   7440-31-5   100.00	varranties provided by Microchip Technology Incorporated and it	s subsidiaries are c					5.03	(mg) Total	leads (pins) - Matte Tin / annealed at 150°C for	% of Total Weight	2.5
Total 100.00		therwise, suffered by users or third parties as a result of the use	rs' reliance on the in	, ,	,				Tin	7440-31-5		
	204.000									Total	100.00	

TO ZB 3 TO-92 10:32 AM : 5/6/2014

MICROCHIP  Semiconductor Device Typ	00 LT 05 a - 0	SC-70 (01/07)		ation Base A	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Typ	e. LI US (Lead) (		0/ <b>T</b> -1-1							es
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	2.59	(mg) Total	Mold Compound	% ot Total Weight	41.18
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		1 Hoophoroac	Total		
Silicon	7440-21-3	Chip (Die)	1.410	0.089	14.100	0.06	() T-(-1	Die Attach	% of Total Weight	1.01
						0.06	(mg) Total			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 on 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	Proprietar	y Curing agent & Hardener	Trade Secret	3	
	0.0063	g Total Mass						Total	100.00	
Compliance with the above EU Directives has been verified via in If a chemical substance is absent from the list above, the chemical Technology Incorporated's knowledge and belief as of the date o	al substance is NOT a f this document, there	an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable					Doped Silicon	7440-21-3 <b>Total</b>	100 <b>100.00</b>	
substance, if any, is not below the threshold of regulatory concer	n for any regulatory s		a mapainty com	entration of t	he chemical					
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard for pla				he chemical	0.06	(mg) Total	Wire Bond	% of Total Weight	0.93
Molding compounds used by Microchip meet the UL94 V0 flamma	ability standard for pla stics/	astics. You can access the UL iQTM family of database	es to obtain a	test report at		0.06	(mg) Total  Doped Gold	Wire Bond 7440-57-5	% of Total Weight	0.93
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla The protective "tubes" in which the specific product is shipped a	ability standard for pla stics/ re made from polyving his form concerning sine best of its knowled cause it has been core as trade secrets and be weight of these pand	astics. You can access the UL iQTM family of database yl chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technologinge and belief, as of the date listed in this form. Microchip lige and belief, as of the date listed in this form. Microchip light as of the date listed in this form. Microchip light as the same information may not have been provided by suts and the average weight of anticipated significant to	es to obtain a o hold the pac gy Incorporate chip Technolo ty Data Sheets abcontract ass oxic metals co	test report at king slip on th d's semicond gy Incorporate provided by emblers and r	ne outer box uctor ed cannot raw material raw material	0.06	,		100	0.93
Molding compounds used by Microchip meet the UL94 V0 flamms http://ul.com/global/eng/pages/offerings/industries/chemicals/pla The protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information in the devices in their original packing materials is true and correct to the guarantee the completeness and accuracy of data in this form be suppliers. Supplier information is often protected from disclosure suppliers. Information is provided only as estimates of the average suppliers. Information is provided only as estimates of the average.	ability standard for plastics/ re made from polyving his form concerning si he best of its knowled cause it has been cor as trade secrets and ge weight of these par -metal materials cont- ty, express or implied ts subsidiaries are co	astics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technolog lge and belief, as of the date listed in this form. Micro mpiled based on the ranges provided in Material Safe I some information may not have been provided by su ts and the average weight of anticipated significant to ained within silicon devices (silicon IC) in the finished I, with respect to the information provided in this decl	es to obtain a o hold the pac gy Incorporate chip Technolo ty Data Sheets abcontract ass oxic metals co i parts. laration. The e	test report at king slip on th d's semicond gy Incorporate provided by emblers and r mponents. Th	uctor ed cannot raw material raw material ese	3.06	,	7440-57-5	100	0.93 48.53
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla The protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information in the devices in their original packing materials is true and correct to the guarantee the completeness and accuracy of data in this form be suppliers. Supplier information is often protected from disclosure suppliers. Information is provided only as estimates of the average settimates do not include trace levels of dopants, metals, and non Microchip Technology Incorporated does not provide any warran warranties provided by Microchip Technology Incorporated and is	ability standard for plastics/ re made from polyving the best of its knowled cause it has been core as trade secrets and ge weight of these partmetal materials contity, express or implied to subsidiaries are cores.  es to Material Contenters' reliance on the informatics/	astics. You can access the UL iQTM family of database by I chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technologige and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safet I some information may not have been provided by suts and the average weight of anticipated significant to ained within silicon devices (silicon IC) in the finished I, with respect to the information provided in this declintained in Microchip's standard terms and conditions to Declarations and shall not be liable for any damages	es to obtain a o hold the pac gy Incorporate chip Technolo ty Data Sheets abcontract ass oxic metals co I parts. laration. The e s of sale. These s, direct or ind	test report at king slip on the d's semicond gy Incorporate provided by emblers and re mponents. The exclusive, limite e are provided	uctor ed cannot raw material ese ed product d in		Doped Gold	7440-57-5  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 11 hour  7440-31-5	100.00 100.00 % of Total Weight	
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla The protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information in the devices in their original packing materials is true and correct to the suppliers. Supplier information is often protected from disclosure suppliers. Supplier information is often protected from disclosure suppliers. Information is provided only as estimates of the average stimates do not include trace levels of dopants, metals, and non Microchip Technology Incorporated does not provide any warran warranties provided by Microchip Technology Incorporated and invoiding to the protection of the provide of the decipies of updates or change otherwise, suffered by users or third parties as a result of the use	ability standard for plastics/ re made from polyving the best of its knowled cause it has been core as trade secrets and ge weight of these partmetal materials contity, express or implied to subsidiaries are cores.  es to Material Contenters' reliance on the informatics/	astics. You can access the UL iQTM family of database yl chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technolog tige and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safet I some information may not have been provided by suts and the average weight of anticipated significant to ained within silicon devices (silicon IC) in the finished I, with respect to the information provided in this declintained in Microchip's standard terms and conditions to Declarations and shall not be liable for any damages	es to obtain a o hold the pac gy Incorporate chip Technolo ty Data Sheets abcontract ass oxic metals co I parts. laration. The e s of sale. These s, direct or ind	test report at king slip on the d's semicond gy Incorporate provided by emblers and re mponents. The exclusive, limite e are provided	uctor ed cannot raw material ese ed product d in		Doped Gold  (mg) Total	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	

LT 5 SC-70 10:32 AM : 5/6/2014

Semiconductor Device Type	U. I.T. or I.T.V. 05 m m 20	2.70 NiDdAu (ou		nation Base A	•		•	ogeneous Materials: g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	: LIOFLIY U5 (Lead) 50	"Contained In"	% Total	1	1			1		e4
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	mag	3.94	(mg) Total	Mold Compound	% ot Total Weight	62.53
Silica, vitreous	60676-86-0	Mold Compound	53.151	3.348	531,505		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	3.830	0.241	38,300	1	Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	3.830	0.241	38,300	1	Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.532	0.097	15,320	1	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		Phosphorous	7723-14-0	0.25	
Diethylene glycol monoethyl ether acetate	112-15-2	Die Attach	0.601	0.038	6,012	1	Zinc (Metal)	7440-66-0	0.15	
Epoxy resin	Trade Secret - 10114	Die Attach	0.328	0.021	3,279			Total		<u> </u>
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 al	ycol monoethyl ether acetate	112-15-2	34	
Gold	7440-57-5	Wire Bond	1.430	0.090	14,300	1 ,	Epoxy resin	Trade Secret - 10114	19	
Nickel	7440-02-0	Plating on external leads (pins)	1.125	0.071	11,250	1	Epoxy resin	Trade Secret - 10105	9	
Palladium	5/3/7440	Plating on external leads (pins)	0.063	0.004	625	1	Amine	Trade Secret - 10039	4	
Gold	7440-57-5	Plating on external leads (pins)	0.063	0.004	625	1		Total	100.00	
		TOTALS:	100.000	6.300	1,000,000	0.47	Total (mg)	Chip (Die)	% of Total Weight	7.52
	0.0063 ~ .	Total Mass			1,111,111	····	Doped Silicon	7440-21-3	100	
ance with the above EU Directives has been	ı verified via internal design contr	ols, supplier declarations, and for analytical tes								
emical substance is absent from the list above		, ,	st data.			0.09	(mg) Total	Wire Bond	% of Total Weight	1.43
ology Incorporated's knowledge and belief a cal substance, if any, is not below the thresh	is of the date of this document, the hold of regulatory concern for any	T an intentional ingredient in the semiconductor	or device and, to avoidable impu	rity concentrat	ion of the	0.09	(mg) Total  Doped Gold	Wire Bond 7440-57-5 Total	100	1.43
ology Incorporated's knowledge and belief as cal substance, if any, is not below the thresh og compounds used by Microchip meet the U ul.com/global/eng/pages/offerings/industries/	is of the date of this document, the hold of regulatory concern for any JL94 V0 flammability standard for Jr/chemicals/plastics/	T an intentional ingredient in the semiconductor are is no credible reason to believe that the uncoregulatory scheme world-wide.  plastics. You can access the UL iQTM family of	or device and, to avoidable impu	rity concentrat	ion of the	0.09	ν υ,	7440-57-5 <b>Total</b>	100	1.43
ology Incorporated's knowledge and belief as cal substance, if any, is not below the thresh g compounds used by Microchip meet the U ul.com/global/eng/pages/offerings/industries/ otective "tubes" in which the specific produc	is of the date of this document, the took of regulatory concern for any JL94 V0 flammability standard for JChemicals/plastics/ Ict is shipped are made from poly	T an intentional ingredient in the semiconductor ere is no credible reason to believe that the un- regulatory scheme world-wide.	or device and, to avoidable impu	rity concentrat	ion of the	0.09	ν υ,	7440-57-5	100	1.43
ology Incorporated's knowledge and belief as cal substance, if any, is not below the thresh ig compounds used by Microchip meet the U ul.com/global/eng/pages/offerings/industries/ otective "tubes" in which the specific production cox and certain "reels" may be made from P thip Technology Incorporated believes the in is in their original packing materials is true as t guarantee the completeness and accuracy atterial suppliers. Supplier information is often w material suppliers. Information is provided w material suppliers.	is of the date of this document, the cold of regulatory concern for any IL94 V0 flammability standard for schemicals/plastics/ ct is shipped are made from poly VC plastic.  Information in this form concerning the correct to the best of its know of data in this form because it have protected from disclosure as tr donly as estimates of the average of only as estimates of the average.	T an intentional ingredient in the semiconductor are is no credible reason to believe that the uncoregulatory scheme world-wide.  plastics. You can access the UL iQTM family of	or device and, to avoidable impu if databases to c s" used to hold fechnology Inco m. Microchip To lin Material Safe been provideo of anticipated si	rity concentrat  btain a test rep  the packing sl  proprated's ser  echnology Inco  ety Data Sheet  d by subcontra  gnificant toxic	port at  ip on the  miconductor  orporated  s provided by  ict assemblers  metals	0.08	Doped Gold	7440-57-5  Total  Plating on external	100	
nology Incorporated's knowledge and belief as ical substance, if any, is not below the threshing compounds used by Microchip meet the U/ul.com/global/eng/pages/offerings/industries/orotective "tubes" in which the specific production box and certain "reels" may be made from Plichip Technology Incorporated believes the interioriginal packing materials is true at ot guarantee the completeness and accuracy naterial suppliers. Supplier information is often aw material suppliers. Information is provided onents. These estimates do not include trace chip Technology Incorporated does not provided onents. These estimates do not include trace chip Technology Incorporated does not provided onents.	is of the date of this document, the old of regulatory concern for any JL94 V0 flammability standard for schemicals/plastics/ct is shipped are made from poly VC plastic.  Information in this form concerning and correct to the best of its know of data in this form because it has protected from disclosure as tr d only as estimates of the average bevels of dopants, metals, and mide any warranty, express or implict of logy Incorporated and its subsidia	T an intentional ingredient in the semiconductor are is no credible reason to believe that the universely seminary scheme world-wide.  plastics. You can access the UL iQTM family of winyl chloride (PVC) plastic. "Window envelopes g substances restricted by RoHS in Microchip T ledge and belief, as of the date listed in this for s been compiled based on the ranges provided ade secrets and some information may not have weight of these parts and the average weight.	or device and, to avoidable impu if databases to co s" used to hold "echnology Inco m. Microchip To in Material Saf in bear provided of anticipated si ces (silicon IC)	rity concentrat  btain a test rep  the packing sl  proporated's ser  schnology Inco  ety Data Sheet  d by subcontra  ignificant toxic  in the finished  n. The exclusiv	port at  ip on the  miconductor orporated ss provided by ict assemblers metals parts.  ve, limited	0.08	Doped Gold (mg) Total	7440-57-5  Total  Plating on external leads (pins)	100.00 % of Total Weight	
ology Incorporated's knowledge and belief as cal substance, if any, is not below the thresh ag compounds used by Microchip meet the U.Il.com/global/eng/pages/offerings/industries/otective "tubes" in which the specific production and certain "reels" may be made from P. In their original packing materials is true as the guarantee the completeness and accuracy aterial suppliers. Information is often w material suppliers. Information is provided onents. These estimates do not include trace with processing the provided by Microchip Technology Incorporated does not provict warranties provided by Microchip Technologed in Microchip's quotations, sales order ackethip disclaims any duty to notify users of updething disclaims any duty to notify users of updething in the call of the call	is of the date of this document, the hold of regulatory concern for any IL94 V0 flammability standard for I/chemicals/plastics/ ct is shipped are made from poly VC plastic. Information in this form concerning and correct to the best of its know of data in this form because it has in protected from disclosure as trip only as estimates of the average elevels of dopants, metals, and not ide any warranty, express or implicitly incorporated and its subsidiate knowledgement, and invoices.  dates or changes to Material Contaresult of the users' reliance on the contare and incorporate of the subsidiation of the users' reliance on the contaresult of the users'	T an intentional ingredient in the semiconductor are is no credible reason to believe that the universe is no credible reason to believe that the universe is no credible reason to believe that the universe is not considered to be plastics. You can access the UL iQTM family of vinyl chloride (PVC) plastic. "Window envelopes g substances restricted by RoHS in Microchip Teledge and belief, as of the date listed in this for some compiled based on the ranges provided ade secrets and some information may not have the weight of these parts and the average weight on-metal materials contained within silicon deviced, with respect to the information provided in	or device and, to avoidable impured and the avoidable impured attached and the avoidable impured attached and the avoidable impured and the avoidable avoidable and the avoida	whether in the packing slope of the packing slope o	port at  ip on the  miconductor orporated os provided by act assemblers metals a parts.  re, limited ese are	0.08	Doped Gold  (mg) Total  Nickel	7440-57-5  Total  Plating on external leads (pins)  7440-02-0	100.00  ** of Total Weight  90.00	

LT LTY 05 SC-70 10:33 AM : 5/6/2014

Sasic Substance	MICROCHIP  Semiconductor Device Typ	De: LT 06 (Lead)	SC-70 (R5)		nation Base /	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Select Substitution	<u>`</u>		"Contained In"				2.79	(mg) Total	Mold Compound	% ot Total Weight	42.97
Egov Resin (No bornions No distintional troologis) Pharmatic Resin (April 26, 253, 20, 40, 40, 40, 40, 40, 40, 40, 40, 40, 4								,			
Phenoic Resin (No. Br / Cz. \$25.33   No. disastimory procises)   Trade Secret   2980-322   Molt Compound   10.53   0.18   10.52   10											
Figure   Traces   Nordisc   2660-032-2   Most Compound   0.103   0.088   10.528   Cathon Black   1333-64   Most Compound   0.174   0.018   1.748   Cathon Black   1333-64   0.08   1.084   Traces   1.084   1333-64   0.08   1.084   Traces   1.08											
Cation Black   1333-86-4   Mold Compound   0.129   0.068   1,289     1,289     1,280   1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280   1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280   1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280   1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280     1,280   1,280     1,280     1,280     1,280     1,280     1,280     1,280											
Copper   740-90-8   Laad Frame   7.079   0.460   7.079								1 . //			
Silver 1744-02-24 Lead Frame 0.14 0.009 1.412 Corporation (mgl Total Lead Frame 0.14 0.009 1.412 Corporation								Carbon black			
Silver 7440/224 Lead Firme 0.009 0.01 93 Phosphorous 7720-14-0 Lead Firme 0.009 0.009 0.01 93 Phosphorous 7720-14-0 Lead Firme 0.006 0.000 61 Phosphorous 7720-14-0 Lead Firme 0.000 61 Phosphorous 7720-14-0 Lead Firme 0.000 61 Phosphorous 61 Phosphorous 7720-14-0 Lead Firme 0.000 61 Phosp							0.40	(mg) Total			7.41
Tare 7440-66-6 Lead Farme 0,008 0,001 83 Phosphorous 7723-15-16 Lead Farme 0,008 0,000 61 Alument mode 1,044-26-1 De Attieth 0,044 0,000 61 Alument (Trade Scorts 10039) (Trade Scorts 1 De Attieth 0,044 0,045 0,							0.46				7.41
Phosphorous 1732-14-0 Lead Frame 0.006 0.000 81 61 Phosphorous 1732-14-0 Lead Frame 0.006 0.000 81 61 Phosphorous 1732-14-0 Phosphor											
Aluminum oxide 1344-28-1 Dia Attach 0,244 0,266 120 200 200 200 200 200 200 200 200 200											
Expoyr sealin Trade Secret   Die Attach   0.770   0.650   7.702    Amino (Trade Secret 1.039)   Crade Secret   Die Attach   0.746   0.063   463    Silicon   7.440-21-3   Chip (Die)   1.850   0.721   15.000    (Giel   7.440-21-3   Plant											
Amine (Trade Secret - 10039) (Trade Secret -											
Silicon   7440-21-3   Chip (Dile)   1.860   0.121   18,600   0.08   (mg) Total   24   10   14   14   14   14   14   14   1						- ,		1 Heaphereds			
Gold 7440-57-5 Wire Bond 1240-58 Wire Bond 1240-							0.08	(mg) Total			1 2/
Tin 744031-5 Parago contends lacks (parago ). Mater This avenated at 1870 Cter 1 tons (46.310) TOTALS: 10,000 6.50 1,000,000 1,000,000 1,000,000 1,000,000						-1	0.00				1.24
D.0.065 g Total Mass  O.0.065 g Total Mass  O.0.074 [Wind Mass											
O.0065 g Total Mass  O.0065 (Potal Mass  O.0065 g Total Mass  O.0066 g Total Weight 1.86  O.006 G Wicrochip Technology  O.007 G Wicrochip Techno	1111	7440-31-3									
in semiconductor device and its homogenous materials comply with EU Directive 2002/39/EC (End-Cl-Life Vehicles (EU) Directive) 2002/39/		0.0065			0.000	.,000,000		Zilline			
irractive 2002/SBCC (End-of-Life Vehicles (ELV) Directive).  Ontiginate with the above EU 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 toorporated'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 you is not below the threshold of regulatory concern for any regulatory scheme world-wide.  In 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 certain "reels" may be made from PVC plastic.  In poper Gold  Total (mg) Total  Wire Bond  % of Total Weight  0.21    Doped Gold   Total (mg) Total   Wire Bond   Wire Bond   % of Total Weight   0.21	<del> </del>									1 00.00	
ompliance with the above EU 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 recorporated's knowledge and belief as of the date of this document, there is no receiblile reason to believe that the unavoidable impurity concentration of the chemical substance, if voicing compounds used by Microchip meet the UL-94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at toolding compounds used by Microchip meet the UL-94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at the unavoidable impurity concentration of the chemical substance, if voicing compounds used by Microchip meet the UL-94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at the unavoidable impurity concentration of the chemical substance, if voicing for expensional plants of 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 certain "reels" may be made from PVC plastic.  It help of plants are 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 certain "reels" may be made from PVC plastic.  It help of plants are 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 certain "reels" may be made from PVC plastic.  It help of plants are the protective "tubes" in which the specific product is the individual plants are the packing slip on the outer box and certai		/ with EU Directive 20	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (F	RoHS Recast D	Directive) and	with EU	0.12	Total (mg)	Chip (Die)	% of Total Weight	1.86
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 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 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 devices 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 guarantee to completeness and accuracy of data in this form because it has been completed based on the ranges provided only as estimates of the average weight of these parts and the average weight of the protected from disclosure as trade secrets and some information in provided only as estimates of the average weight of these parts and the average weight of the separts and the average weight of anticipated significant toxic metals components. These estimates of not clude trace levels of dopants, metals, and non-metal materials contained within silicon	compliance with the above EU Directives has been verified via in	ternal design control									
ttp://ul.com/global/eng/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 certain "reels" may be made from PVC plastic.    Doped Gold   7440-57-5   100		torriar accigir control	s, supplier declarations, and /or analytical test data.					Doped Silicon			
licrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices a 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 guarantee the 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 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 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 of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Ilicrochip 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 leads (pins) - Matter Tin / annealed at 150°C for / 1 hour     Plating on external leads (pins) - Matter Tin / annealed at 150°C for / 1 hour    Add   Add	ncorporated's knowledge and belief as of the date of this docume	al substance is NOT a ent, there is no credit	an intentional ingredient in the semiconductor device a ble reason to believe that the unavoidable impurity cor					Doped Silicon			
iterochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices 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 guarantee to ecompleteness 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. Use of the second in the sec	ncorporated's knowledge and belief as of the date of this docume ny, is not below the threshold of regulatory concern for any regu folding compounds used by Microchip meet the UL94 V0 flamma	al substance is NOT a ent, there is no credit ulatory scheme world ability standard for pla	an intentional ingredient in the semiconductor device a ble reason to believe that the unavoidable impurity cor -wide.	ncentration of	the chemical				Total	100.00	0.21
iterochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices 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 guarantee to ecompleteness 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. Use of the second in the sec	ncorporated's knowledge and belief as of the date of this docume iny, is not below the threshold of regulatory concern for any regu- folding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/plas the protective "tubes" in which the specific product is shipped an	al substance is NOT a ent, there is no credit ulatory scheme world ability standard for pla stics/	an intentional ingredient in the semiconductor device a ble reason to believe that the unavoidable impurity cor -wide. astics. You can access the UL iQTM family of database	ncentration of	the chemical	substance, if		(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.21
leads (pins) - Matter Tin / annealed at 150°C for 1 hour    Compliance down and the subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in microchip's quotations, sales order acknowledgement, and invoices.    Compliance for semiconductor products as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS)    Compliance for semiconductor products.   Compliance for semiconductor products.   Compliance for semiconductor products   Compliance for semiconductor products.   Compliance for semiconductor products.   Compliance for semiconductor products   Compliance for semiconductor products.   Compliance for semiconductor products   Comp	ncorporated's knowledge and belief as of the date of this documenty, is not below the threshold of regulatory concern for any regundolding compounds used by Microchip meet the UL94 V0 flammantp://ul.com/global/eng/pages/offerings/industries/chemicals/plastiche protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.	al substance is NOT a ent, there is no credit ulatory scheme world ability standard for pla stics/ re made from polyvin	an intentional ingredient in the semiconductor device a ble reason to believe that the unavoidable impurity cor -wide.  astics. You can access the UL iQTM family of database yl chloride (PVC) plastic. "Window envelopes" used to	es to obtain a to hold the pac	the chemical est report at	substance, if		(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.21
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)  Tin 7440-31-5 100.00  To this Certificate of Compliance for semiconductor products.	ncorporated's knowledge and belief as of the date of this docume iny, is not below the threshold of regulatory concern for any formation and the protective "tubes" in which the specific product is shipped at any certain "reels" may be made from PVC plastic.  Alicrochip Technology Incorporated believes the information in the protective that the protective 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 is information is provided only as estimates of the average weight of	al substance is NOT a ent, there is no credit ulatory scheme world ability standard for pla stics/ re made from polyvin his form concerning s of its knowledge and I is been compiled bas- secrets and some info of these parts and the	an intentional ingredient in the semiconductor device a ble reason to believe that the unavoidable impurity cor- -wide.  astics. You can access the UL iQTM family of database yl chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technolog belief, as of the date listed in this form. Microchip Teck ed on the ranges provided in Material Safety Data She ormation may not have been provided by subcontract a average weight of anticipated significant toxic metals	ncentration of es to obtain a to be hold the pack y Incorporate nnology Incorp ets provided to assemblers an	the chemical est report at king slip on th d's semicondi borated canno by raw materia d raw materia	substance, if  e outer box  uctor devices t guarantee al suppliers. Il suppliers.		(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.21
	ncorporated's knowledge and belief as of the date of this docume into, is not below the threshold of regulatory concern for any for any the protective "tubes" in which the specific product is shipped at any certain "reels" may be made from PVC plastic.  Alicrochip Technology Incorporated believes the information in the 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 bupplier information is often protected from disclosure as trade's information is provided only as estimates of the average weight of include trace levels of dopants, metals, and non-metal materials of discrochip Technology Incorporated does not provide any warrant varranties provided by Microchip Technology Incorporated and it	al substance is NOT a ent, there is no credit ulatory scheme world ability standard for plastics/ re made from polyvin his form concerning s of its knowledge and its been compiled bassecrets and some info of these parts and the contained within silicoty, express or implied ts subsidiaries are co	an intentional ingredient in the semiconductor device a ble reason to believe that the unavoidable impurity cor-wide.  astics. You can access the UL iQTM family of database by chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technolog belief, as of the date listed in this form. Microchip Tech do not the ranges provided in Material Safety Data She brimation may not have been provided by subcontract a average weight of anticipated significant toxic metals on devices (silicon IC) in the finished parts.	ncentration of es to obtain a to b hold the pack y Incorporate nology Incorporate sets provided to assemblers an components.	the chemical  est report at  king slip on th  d's semicondi  orated canno  oy raw materia  d raw materia  These estima  cclusive, limite	substance, if  e outer box  uctor devices t guarantee il suppliers. Il suppliers. tes do not	0.01	(mg) Total  Doped Gold	Wire Bond 7440-57-5 Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100.00 % of Total Weight 100 100.00	
	acorporated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flamma ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plast he protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  dicrochip Technology Incorporated believes the information in the their original packing materials is true and correct to the best of the completeness and accuracy of data in this form because it has upplier information is often protected from disclosure as trades of formation is provided only as estimates of the average weight of iclude trace levels of dopants, metals, and non-metal materials of ilicrochip Technology Incorporated does not provide any warrant arranties provided by Microchip Technology Incorporated and it icrochip's quotations, sales order acknowledgement, and invoic ilicrochip disclaims any duty to notify users of updates or change therwise, suffered by users or third parties as a result of the use	al substance is NOT a ent, there is no creditulatory scheme world ability standard for plastics/ re made from polyvin his form concerning s of its knowledge and it as been compiled basecrets and some info of these parts and the contained within silicotty, express or implied ts subsidiaries are coces.	an intentional ingredient in the semiconductor device a ble reason to believe that the unavoidable impurity cor-wide.  astics. You can access the UL iQTM family of database by chloride (PVC) plastic. "Window envelopes" used to ubstances restricted by RoHS in Microchip Technolog belief, as of the date listed in this form. Microchip Tech ed on the ranges provided in Material Safety Data Shebrmation may not have been provided by subcontract average weight of anticipated significant toxic metals on devices (silicon IC) in the finished parts.  d, with respect to the information provided in this declarations in Microchip's standard terms and conditions to Declarations and shall not be liable for any damages	es to obtain a to botain a to	the chemical est report at king slip on th d's semicondi orated canno by raw materia These estima culusive, limite e are provided	substance, if  e outer box  uctor devices t guarantee il guarpliers. Il suppliers. tes do not  ed product in	0.01	(mg) Total  Doped Gold  (mg) 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	

LT 6 SC-70 10:33 AM : 5/6/2014

AICROCHIP  Semiconductor Device Type	o: SS 20 (1) S	SOB on the section		nation Base opper Alloy (6	,			geneous Materials: . pc boards, displays	1	JEDEC 97 Product Markin and/or Pkg. Labeling e3
Semiconductor Device Type	e: 33 ZU (Lead) 3		W 1 -1-1							63
Basic Substance	CAS Number	"Contained In" Sub-Component	% Lotal Weight	mg/part	ppm	131.03	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	113,880	693.542		Silica, vitreous	60676-86-0	86.91	i e
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	10.050	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	6.696	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.406	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	16.472	100,314			Total	100.00	_
Iron	7439-89-6	Lead Frame	0.247	0.405	2,468	17.24	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.328	2.000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.022	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.014	87		Silver	7440-22-4	1.91	
Silver (Aa)	7440-22-4	Die Attach	0.563	0.924	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.172	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.092	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.043	263	1.23	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	12.315	75,000	1.23	Silver (Ag)	7440-22-4	75.00	0.73
Doped Gold	7440-57-5	Wire Bond	0.200	0.328	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	2.053	12.500		Diglycidylether of bisphenol-F	54208-63-8	7.50	
1111	7440-31-3	TOTALS:	100.000	164.200	1.000.000		Modified Amine	827-43-0	3.50	
	0.4040	Total Mass	100.000	104.200	1,000,000		Woulled Amilie	Total	100.00	
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 inte			torio necasi	Directive) and	- Willi EU	12.32	(mg) Total  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
chemical substance is absent from the list above, the chemical hnology Incorporated's knowledge and belief as of the date of t mical substance, if any, is not below the threshold of regulatory	his document, there is concern for any regu	s no credible reason to believe that the unavoidable latory scheme world-wide.	impurity cor	centration of	the			Total	100.00	•
ding compounds used by Microchip meet the UL94 V0 flammab ://ul.com/global/eng/pages/offerings/industries/chemicals/plast		tics. You can access the UL iQTM family of database	es to obtain a	a test report at	t	0.33	(mg) Total	Wire Bond	% of Total Weight	0.2
protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.	made from polyvinyl	chloride (PVC) plastic. "Window envelopes" used to	hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100.00	
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 becs piliers. Supplier information is often protected from disclosure pilers. Information is provided only as estimates of the average mates do not include trace levels of dopants, metals, and non-	best of its knowledge use it has been comp as trade secrets and so weight of these parts	e and belief, as of the date listed in this form. Microcilled based on the ranges provided in Material Safety ome information may not have been provided by suit and the average weight of anticipated significant to	hip Technology  Data Sheets  bcontract as  exic metals contract	ogy Incorporates provided by semblers and	ted cannot raw material raw material			Total	100.00	-
ochip Technology Incorporated does not provide any warranty ranties provided by Microchip Technology Incorporated and its ochip's quotations, sales order acknowledgement, and invoice	subsidiaries are cont					2.05		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
	to Material Content D	Declarations and shall not be liable for any damages,					_	7440.04.5	400.00	
rochip disclaims any duty to notify users of updates or changes erwise, suffered by users or third parties as a result of the users SS) or of this Certificate of Compliance for semiconductor produ		mation in Material Content Declarations (MCD) or in	dependent t	hird party test	reports		Tin	7440-31-5	100.00	

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Semiconductor Device Type:  Basic Substance  Silica, vitreous  Epoxy Resin (No bromine, No diantimony trioxide)  Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)  Epoxy, Cresol Novolac  Carbon Black  Copper  Iron  Silver  Zinc  Phosphorous	CAS Number 60676-86-0 Trade Secret Trade Secret 29690-82-2 1333-86-4 7440-50-8 7439-89-6 7440-22-4 7440-66-6	"Contained In" Sub-Component  Mold Compound Mold Compound Mold Compound Mold Compound Mold Compound Lead Frame	% Total Weight 55.395 3.992 3.992	mg/part 103.316 7.445	ppm	121.55	(mg) Total	Mold Compound	% ot Total Weight	e3 65.17
Silica, vitreous  Epoxy Resin (No bromine, No diantimony trioxide)  Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)  Epoxy, Cresol Novolac  Carbon Black  Copper  Iron  Silver  Zinc	60676-86-0 Trade Secret Trade Secret 29690-82-2 1333-86-4 7440-50-8 7439-89-6 7440-22-4	Mold Compound Mold Compound Mold Compound Mold Compound Mold Compound	55.395 3.992 3.992	103.316			(a)		,, , , , , , , , , , , , , , , , , , ,	
Epoxy Resin (No bromine, No diantimony trioxide) Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Epoxy, Cresol Novolac Carbon Black Copper Iron Silver Zinc	Trade Secret Trade Secret 29690-82-2 1333-86-4 7440-50-8 7439-89-6 7440-22-4	Mold Compound Mold Compound Mold Compound Mold Compound	3.992 3.992							<del></del>
Epoxy Resin (No bromine, No diantimony trioxide) Phenolic Resin (No Br / CL SbO3, No diantimony trioxide) Epoxy, Cresol Novolac Carbon Black Copper Iron Silver Zinc	Trade Secret Trade Secret 29690-82-2 1333-86-4 7440-50-8 7439-89-6 7440-22-4	Mold Compound Mold Compound Mold Compound Mold Compound	3.992 3.992		553,945		Silica, vitreous	60676-86-0	85.00	i
Epoxy, Cresol Novolac Carbon Black Copper Iron Silver Zinc	29690-82-2 1333-86-4 7440-50-8 7439-89-6 7440-22-4	Mold Compound Mold Compound		7.445	39,917		Epoxy Resin	Trade Secret	6.13	d
Carbon Black Copper Iron Silver Zinc	1333-86-4 7440-50-8 7439-89-6 7440-22-4	Mold Compound		7.445	39,917		Phenolic Resin	Trade Secret	6.13	i
Copper Iron Silver Zinc	7440-50-8 7439-89-6 7440-22-4		1.597	2.978	15,967		Epoxy, Cresol Novolac	29690-82-2	2.45	i
Iron Silver Zinc	7439-89-6 7440-22-4	I ead Frame	0.196	0.365	1,955		Carbon Black	1333-86-4	0.30	<u>i</u>
Silver Zinc	7440-22-4		28.222	52.636	282,218			Total	100.00	
Zinc		Lead Frame	0.694	1.295	6,942	55.10	(mg) Total	Lead Frame	% of Total Weight	29.54
	7440-66-6	Lead Frame	0.563	1.050	5,627		Copper	7440-50-8	95.54	d
Phosphorous		Lead Frame	0.037	0.069	369		Iron	7439-89-6	2.35	d
	7723-14-0	Lead Frame	0.024	0.045	244		Silver	7440-22-4	1.91	d
Silver	7440-22-4	Die Attach	0.622	1.159	6,216		Zinc	7440-66-6	0.13	d
Epoxy resin	Trade Secret	Die Attach	0.168	0.313	1,680		Phosphorous	7723-14-0	0.08	ıl .
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	d
Gold Tin	7440-57-5	Wire Bond	0.250 1.710	0.466 3.189	2,500 17,100		Epoxy resin	Trade Secret	20	d
I III	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.000	186.510	1.000.000		Metal oxide	Trade Secret	3	d
	0.4005	TOTALS: q Total Mass	100.000	100.510	1,000,000		Gamma-butyrolactone	96-48-0 <b>Total</b>	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 structure of the date of the chemical substance, if any, is not below the threshold of regulatory	substance is NOT nis document, the	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoida	ce and, to the b				Doped Silicon	7440-21-3 <b>Total</b>	100 <b>100.00</b>	
Molding compounds used by Microchip meet the UL94 V0 flammabi http://ul.com/global/eng/pages/offerings/industries/chemicals/plasti		lastics. You can access the UL iQTM family of datab	ases to obtain	a test report a	at	0.47	(mg) Total	Wire Bond	% of Total Weight	0.25
The protective "tubes" in which the specific product is shipped are box and certain "reels" may be made from PVC plastic.	made from polyvi	nyl chloride (PVC) plastic. "Window envelopes" use	d to hold the p	acking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in this devices in their original packing materials is true and correct to the guarantee the completeness and accuracy of data in this form beca material suppliers. Supplier information is often protected from disc raw material suppliers. Information is provided only as estimates of These estimates do not include trace levels of dopants, metals, and Microchip Technology Incorporated does not provide any warranty,	best of its knowle use it has been co closure as trade se the average weigl non-metal materi	dge and belief, as of the date listed in this form. Mic ompiled based on the ranges provided in Material Sa screts and some information may not have been pro ht of these parts and the average weight of anticipat als contained within silicon devices (silicon IC) in th	rochip Techno afety Data Shee vided by subco ed significant to e finished parts	logy Incorporates provided be portract assem coxic metals coss.	ated cannot y raw blers and omponents.			Total	100.00	
warranties provided by Microchip Technology Incorporated and its Microchip's quotations, sales order acknowledgement, and invoices Microchip disclaims any duty to notify users of updates or changes	subsidiaries are c s. to Material Conte	ontained in Microchip's standard terms and condition	ons of sale. The ges, direct or in	ese are provid	ed in quential or	3.19		leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.71
otherwise, suffered by users or third parties as a result of the users (SGS) or of this Certificate of Compliance for semiconductor productions of the Certificate of Compliance for semiconductor productor productions of the Certificate of Compliance for semiconductor productor p		nformation in Material Content Declarations (MCD) o	r independent	third party tes	t reports	186.510	Tin	7440-31-5 <b>Total</b>	100.00	100.000

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Total 100.00  To	MICROCHIP  Semiconductor Device Type	e: SS and SI 28 (I	.ead) SSOP .209" (N2 / ND)		nation Base A	•			ogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Silice, virticous   6097-89-61   Mold Compound   4-286   153, 468   172-30   468   172-30	Basic Substance	CAS Number			mg/part	mag	182.90	(mg) Total	Mold Compound	% ot Total Weight	79.8
Export Resert No. distrimproy (routed)   Trade Secret   Model Compound   4.888   11.203   48.678					<u> </u>			Silica vitreous	60676-86-0	85.00	
Phenois Repark (Ne Br / Cs. SCO), No disminrory trouble)											
Eppsy Created Nevolace											
Carbon Black				1.955	4.481	19,551		Epoxy, Cresol Novolac		2.45	
Fine	Carbon Black	1333-86-4	Mold Compound	0.239	0.549	2,394			1333-86-4	0.30	
Fig. 10		7440-50-8		10.031	22,992	100.314				100.00	
Silver   7440-224   Lead Frame   0.200   0.458   2.000							24.07	(mg) Total	Lead Frame	% of Total Weight	10.5
Zinc   744-08-68   Lead Frame   0.013   0.030   131   151							24.07				10.0
Photophorous 7723-14-0   Lead Frame   0.009   0.220   87   Silver (Ag)   7440-224   De Attach   0.553   1.289   5.625   Disylogicytherid of Displayment-F   5420-65-3   Dis Attach   0.056   0.7241   1.050   Displaycytherid of Displayment-F   5420-65-3   Dis Attach   0.056   0.7241   1.050   Notice   7440-27-3   Chy (Dis)   7.500   17.150   7.500   Displaycytherid of Displayment-F   7440-65-4   Displayment-F   7440-65-5											
Signed (Approximation of the Complete (Percent of Section 1) (1) (1) (1) (1) (1) (1) (1) (1) (1)											
Modified Epoxy Resin   13561-08-5   Die Attach   0.105   0.241   1,050   Diptycyteher of Dispersion   13561-08-5   Die Attach   0.056   0.129   563.    Modified Annie   827-43-0   Die Attach   0.026   0.000   263   1.72   (mg) Total   Die Attach   0.026   0.000   0.											
Diglycic/yether of bispheroi-F   \$4209-633-8   De Attach   0.056   0.129   563   Modified Annien   827-43-0   De Attach   0.026   0.060   263   Siltion   7440-21-3   Chip (Dia)   7.500   7.750											
Modified Amine 827-43-0 Die Attrach 0.026 0.060 263 1.72 (mg) Total Die Attrach 9.75 0.001 (Slicer (2) 7440-21-3 Chip (Die) 7.500 1.75 0.001 (Slicer (2) 7440-22-4 75 0.001 (Slicer (2) 7440-21-5 (Slicer (2)	. ,							Filospilorous			
Silicon 7440:21-3 Chip (Diple) 7.500 17:100 17:000 0.458 2.000 1.000,000 1.000	377										
Gold 7440:57-5 Purgue or exercited by RoHS in Tin 7440:57-5 Purgue or exercited by RoHS in Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated does not provided by Microchip Technology Incorporated does not provided any duty no notify so quaranted the completeness and accuracy of data in this form decompletes are contained in Microchip Technology Incorporated does not provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information may not have been provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information may not have been provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information may not have been provided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information may not have been provided by Subcontract assemblers war waterial suppliers. Information is provided only successing the completeness and or changed and 150°C for 1 hour was a final to the completeness and a securacy of data in this form econgiled based on the average weight of these parts and the average weight controlled for the average weight of these parts and the average weight of these part							1.72				0.75
Tin											
D.2292 g Total Mass semiconductor device and its homogeneous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU pliance with the above EU Directives has been vertified via internal design controls, supplier declarations, and /or analytical test data.  **Total** 100.000  **Total** 1											
O.2292 g Total Mass  O.2293 g Total Mass  O.20293 g Total Mass  O.2293 g Total Mass  O.2293 g Total Mass  O.20293 g Total Mass  O.2293 g Total Mass  O.2293 g Total Mass  O.20293 g Total Mass  O.20294 S III Cond-Life Vehicles (ELV) Directives has been crefiled via internal design controls, suppler information in this form concerning substances 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 and certain "reels" may be made from PVC plastic.  O.46 (mg) Total Wire Bond % of Total Weight 0.2  O.2029 Gold 7.440-57-5 100  O.46 (mg) Total Wire Bond % of Total Weight 0.2  O.2020 G Total Weight 0.2  O.2020 Gold 7.440-57-5 100  O.2020 G Total Weight 0.2  O.2020 G Total Weight 0.2  O.2021 G Total Weight 0.2  O.2022 G Total Weight 0.	lin	7440-31-5 Pla					Dig				
semiconductor device and its homogenous materials comply with EU Directive 2002/99/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Live 2002/99/EC (RoH-G-Life Vehicles (ELV) Directive).  17.19 Total (mg) Chip (Die) % of Total Weight 7.5 plane with the above EU Directive sha been everified via internal design controls, supplier declarations, and /or analytical test data.  17.19 Total (mg) Chip (Die) % of Total Weight 7.5 plane with the above EU Directive sha been everified via internal design controls, supplier includes that the unavoidable impurity concentration of the inclass dustance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  18. Doped Silicon 7.440.21.3 10.0  19. Doped Silicon 7.440.21.3 10.0  20. de (mg) Total Wire Bond % of Total Weight 0.2  20. Doped Gold 7.440.57.5 10.0  20. Do			TOTALS:	100.000	229.200	1,000,000		Modified Amine			
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 Vul.com/global/eng/pages/offerings/industries/chemicals/plastics/  vortective "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 and certain "reels" may be made from PVC plastic.  vortip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor sein 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 of guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers aw material suppliers. Information is orten protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers aw material suppliers. Information is provided only as estimates of the average weight of anticipated significant toxic metals onemts. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  vortip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited ucts warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided crochip's quotations, sales order acknowledgement, and invoices.  2.87 (mg) Total  Plating on external leads (pins) · Matte Tin / annealed at 150°C for 1 hour  7.440-31-5 100.00  Total Wire Bond  7.440-57-5 100  1.28	tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)							Total (ma)	Chin (Dia)	9/ of Total Weight	7.5
Doped Gold 7440-57-5 100  Total 100.00  Tota	mpliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica	Il substance is NOT an	intentional ingredient in the semiconductor dev	vice and, to the	best of Micro	chip	17.19		7440-21-3	100	7.5
ochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor bes 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 by subcontract assemblers raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals ponents. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  The exclusive, limited uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided uct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided t	mpliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica hnology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulator ding compounds used by Microchip meet the UL94 V0 flamma:://ul.com/global/eng/pages/offerings/industries/chemicals/plas	Il substance is NOT an this document, there i ry concern for any regi bility standard for plas stics/	intentional ingredient in the semiconductor dev s no credible reason to believe that the unavoid ulatory scheme world-wide. tics. You can access the UL iQTM family of data	rice and, to the lable impurity of bases to obtai	best of Micro concentration	ochip of the		Doped Silicon	7440-21-3 Total	100	
uct warranties provided by Microphrated does not provide any warranty, express or implied, with respect to the information provided in Mis declaration. The exclusive, limited  2.87 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour  2.87 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour  2.87 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour  2.87 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour  2.87 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour  3.87 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1 hour  4.88 (pins) - Matte Tin / annealed at 150°C for 1 hour  5.80 or of this Certificate of Compliance for semiconductor products.	npliance with the above EU Directives has been verified via int chemical substance is absent from the list above, the chemica hnology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulator 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	Il substance is NOT an this document, there i ry concern for any regi bility standard for plas stics/	intentional ingredient in the semiconductor dev s no credible reason to believe that the unavoid ulatory scheme world-wide. tics. You can access the UL iQTM family of data	rice and, to the lable impurity of bases to obtai	best of Micro concentration	ochip of the		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100.00  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  Tin 7440-31-5 100.00  To 7440-31-5 100.00	mpliance with the above EU Directives has been verified via into chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulator in the compounds used by Microchip meet the UL94 V9 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plase e protective "tubes" in which the specific product is shipped arx and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to the not guarantee the completeness and accuracy of data in this for material suppliers. Supplier information is often protected frod raw material suppliers. Information is provided only as estimal mponents. These estimates do not include trace levels of dopain and the completeness and accuracy of the protected from the protected f	al substance is NOT an this document, there is ry concern for any regional states. It is a substantial	intentional ingredient in the semiconductor devision to credible reason to believe that the unavoidulatory scheme world-wide.  tics. You can access the UL iQTM family of datal chloride (PVC) plastic. "Window envelopes" use the stances restricted by RoHS in Microchip Techne and belief, as of the date listed in this form. Mien compiled based on the ranges provided in Misecrets and some information may not have beeight of these parts and the average weight of antetal materials contained within silicon devices (see the contained of the contained within silicon devices (see	bases to obtai ed to hold the lology Incorpo crochip Techr aterial Safety I in provided by icipated signif silicon IC) in the	e best of Micro concentration in a test report packing slip of rated's semico lology Incorpo Jata Sheets pi subcontract a icant toxic me ne finished par	of the  t at  on the outer  onductor  orated crovided by assemblers tals rts.		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5  Total	100.00  100.00  % of Total Weight	
	impliance with the above EU Directives has been verified via introchemical substance is absent from the list above, the chemical chinology incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulator iding compounds used by Microchip meet the UL94 V0 flamma or://ul.com/global/eng/pages/offerings/industries/chemicals/plase protective "tubes" in which the specific product is shipped at and certain "reels" may be made from PVC plastic.  Prochip Technology Incorporated believes the information in the protective in their original packing materials is true and correct to the internation of the protected from a material suppliers. Information is often protected from a material suppliers. Information is provided only as estimated in the process of the protected from th	Il substance is NOT an this document, there i ry concern for any regulative transport of the state of the average weints, metals, and non-my, express or implied, and its subsidiaries oices.	intentional ingredient in the semiconductor devise no credible reason to believe that the unavoidulatory scheme world-wide.  tics. You can access the UL iQTM family of datal chloride (PVC) plastic. "Window envelopes" use ostances restricted by RoHS in Microchip Techne and belief, as of the date listed in this form. Mien compiled based on the ranges provided in Misecrets and some information may not have beeight of these parts and the average weight of antetal materials contained within silicon devices (with respect to the information provided in this or are contained in Microchip's standard terms and	bases to obtain the colony incomparison of the colony incomparison provided by its part of the colony in the colon	e best of Micro concentration in a test report packing slip of rated's semicro lology Incorpo Data Sheets prosubcontract a iciant toxic me ne finished par ne exclusive, life sale. These	or the  t at  on the outer  onductor  orated  rovided by  assemblers  etals  rts.  imited  are provided	0.46	Doped 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	100 100.00 % of Total Weight 100 100.00	0.2
	npliance with the above EU Directives has been verified via int 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 regulator 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 and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information in thices in their original packing materials is true and correct to the not guarantee the completeness and accuracy of data in this fraterial suppliers. Supplier information is often protected from a material suppliers. Supplier information is often protected from a material suppliers. Information is provided only as estimated protected from the suppliers of the suppliers as a result of the use provise, suffered by users of third parties as a result of the use provise, suffered by users of third parties as a result of the use provise in the suppliers as a supplier of the use provise, suffered by users of third parties as a result of the use provise in the suppliers as a supplier of the use provise in the suppliers as a result of the use provise in the suppliers as a result of the use provise in the suppliers as a result of the use provise in the suppliers as a result of the use provise in the suppliers as a result of the use provise in the suppliers as a result of the use provise in the suppliers as a result of the use provise in the suppliers as a result of the use provise in the suppliers as a result of the use provise in the suppliers as a result of the use provise in the suppliers are suppliers.	Il substance is NOT an this document, there i ry concern for any region bility standard for plastics/ e made from polyvinyl is form concerning subset of its knowledge orm because it has been disclosure as trade ettes of the average weights, metals, and non-muy, express or implied, and and its subsidiaries pices.	intentional ingredient in the semiconductor devision to credible reason to believe that the unavoidulatory scheme world-wide.  tics. You can access the UL iQTM family of datal chloride (PVC) plastic. "Window envelopes" use the stances restricted by RoHS in Microchip Techne and belief, as of the date listed in this form. Missecrets and some information may not have been ght of these parts and the average weight of antetal materials contained within silicon devices (with respect to the information provided in this care contained in Microchip's standard terms an Declarations and shall not be liable for any dama.	bases to obtain the cology Incorporate in a cology Inc	e best of Micro concentration in a test report packing slip of rated's semicro lology Incorpo Data Sheets pi subcontract a icant toxic me re finished pai ne exclusive, li of sale. These indirect, cons	ochip of the  at at  on the outer  onductor  orated rovided by assemblers stals stals imited are provided sequential or	0.46	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 hour	100 100.00  % of Total Weight  100  100.00  % of Total Weight  100.00	1.25

SS SI 28 SSOP 10:34 AM : 5/6/2014

100.000

Semiconductor Devi	ice Type: WHE 32 TS	OP 8x14mm (W6)		nation 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	% Total Weight	mg/part	ppm	199.26	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	169.372	678.300		Silica, vitreous (or fused)	60676-86-0	85.00	1
Epoxy Resin	Trade Secret	Mold Compound	6.943	17.336	69,426		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	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		Carbon Black	Total	100.00	<u>a</u>
Nickel	7440-02-0	Lead Frame	0.267	0.666	2,667	26.22	(mg) Total	Lead Frame	% of Total Weight	10.5
Silicon	7440-02-0	Lead Frame	0.207	0.000	473	20.22		7440-50-8	95.24	10.5
Magnesium	7440-21-3	Lead Frame	0.047	0.026	105		Copper Nickel	7440-00-8	95.24 2.54	ł
Silver	7440-22-4	Lead Frame	0.175	0.020	1.752		Silicon	7440-02-0	0.45	ł
Silver	7440-22-4	Die Attach	0.600	1.498	6.000		Magnesium	7439-95-4	0.45	ł
Epoxy Resin	Trade Secret	Die Attach	0.000	0.318	1.275		Silver	7440-22-4	1.67	ł
	7440-50-8		0.128	0.056	225		Silvei			1
Copper		Die Attach						Total	100.00	
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	Plating 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	3.00	!
	0 2/07 6	. Tatal Mass								
	comply with EU Directive 200	g Total Mass 12/95/EC (RoHS Directive), EU Directive 2011/65/EU (I	RoHS Recast	Directive) an	d with EU	18 73	(mg) Total	Total	100.00	
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 nology Incorporated's knowledge and belief as of the	comply with EU Directive 200 ). d via internal design controls, chemical substance is NOT an e date of this document, there	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (I supplier declarations, and /or analytical test data. a intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable	and, to the be	est of Microcl	nip	18.73	(mg) Total Silicon	Total Chip (Die) 7440-21-3 Total	100.00 % 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 verifie memical substance is absent from the list above, the nology incorporated's knowledge and belief as of the lical substance, if any, is not below the threshold of rang compounds used by Microchip meet the UL94 V0	comply with EU Directive 200 ). d via internal design controls, chemical substance is NOT an e date of this document, there egulatory concern for any reg flammability standard for plas	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (I supplier declarations, and /or analytical test data. Intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable ulatory scheme world-wide.	and, to the be impurity cor	est of Microcl	nip f the	0.50	,	Chip (Die) 7440-21-3	% of Total Weight	7.5
semiconductor device and its homogenous materials tive 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 anology Incorporated's knowledge and belief as of the incal substance, if any, is not below the threshold of roling compounds used by Microchip meet the UL94 VO //ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic.	comply with EU Directive 200 ). d via internal design controls, chemical substance is NOT an e date of this document, there egulatory concern for any reg flammability standard for plas cals/plastics/	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (I supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable ulatory scheme world-wide.	and, to the be impurity cor	est of Microck ncentration of a test report a	nip f the t		Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight	7.5
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 unology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of roling 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	comply with EU Directive 200 ). d via internal design controls, chemical substance is NOT an date of this document, there regulatory concern for any reg flammability standard for plas cals/plastics/ ipped are made from polyviny ion in this form concerning su ect to the best of its knowledg form because it has been com from disclosure as trade secr timates of the average weight	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (I supplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable ulatory scheme world-wide.  Stics. You can access the UL iQTM family of database of the control of the contro	and, to the best impurity consists to obtain a phold the party incorporate this Technology Data Sheet ed by subcosignificant to	est of Microcl ncentration of a test report a cking slip on ed's semicon ogy Incorpora ts provided by ntract assemi oxic metals cc	t the outer ductor sted cannot y raw blers and		Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight  100  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 verifies themical substance is absent from the list above, the unology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of right ing compounds used by Microchip meet the UL94 Vol/ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic. pochip Technology Incorporated believes the informatices in their original packing materials is true and corrantee the completeness and accuracy of data in this rigial suppliers. Supplier information is often protected material suppliers. Information is provided only as est	comply with EU Directive 200 ). d via internal design controls, chemical substance is NOT an e date of this document, there regulatory concern for any reg flammability standard for plas cals/plastics/ ipped are made from polyviny ion in this form concerning su ect to the best of its knowledg form because it has been com from disclosure as trade secr timates of the average weight etals, and non-metal materials warranty, express or implied, d and its subsidiaries are con	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (I supplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable ulatory scheme world-wide.  Stics. You can access the UL iQTM family of database of the contained with the unavoidable ulatory scheme world-wide.  I chloride (PVC) plastic. "Window envelopes" used to be the contained with the contained with the contained with the contained within silicon devices (silicon IC) in the fire with respect to the information provided in this declaration.	and, to the be impurity cores to obtain a phold the party incorporate this Technology Data Sheet ed by subcosignificant tonished parts.	est of Microcl ncentration of a test report a cking slip on ted's semicon ogy Incorpora ts provided by ntract assemi oxic metals co	t the outer ductor sted cannot y raw blers and omponents.		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  100.00	0.2
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive bliance with the above EU Directives has been verified hemical substance is absent from the list above, the inclogy Incorporated's knowledge and belief as of the ideal substance, if any, is not below the threshold of right of the incorporated sued by Microchip meet the UL94 Volucom/global/eng/pages/offerings/industries/chemicortective "tubes" in which the specific product is shound certain "reels" may be made from PVC plastic. The incorporated believes the information is in their original packing materials is true and corruntee the completeness and accuracy of data in this infall suppliers. Supplier information is often protected naterial suppliers. Information is provided only as esting estimates do not include trace levels of dopants, monthly Technology Incorporated does not provide any untiles provided by Microchip Technology Incorporated for the information is provided any interporated by Microchip Technology Incorporated does not provide any untiles provided by Microchip Technology Incorporated does not provide any untiles provided by Microchip Technology Incorporated does not provide any untiles provided by Microchip Technology Incorporated does not provided by Microchip Technology Incorporated does not provided any untiles provided by Microchip Technology Incorporated does not provided any untiles provided by Microchip Technology Incorporated does not provided by Microchip Technology Incorporated does not provided any untiles provided by Microchip Technology Incorporated does not provided any untiles provided by Microchip Technology Incorporated does not provided any untiles provided by Microchip Technology Incorporated does not provided any untiles provided by Microchip Technology Incorporated does not provided any untiles	comply with EU Directive 200 ). d via internal design controls, chemical substance is NOT an e date of this document, there egulatory concern for any reg flammability standard for plas cals/plastics/ ipped are made from polyviny ion in this form concerning su ect to the best of its knowledg form because it has been com from disclosure as trade secr timates of the average weight etals, and non-metal materials warranty, express or implied, and its subsidiaries are con d invoices.  r changes to Material Content the users' reliance on the info	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (I supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable ulatory scheme world-wide.  Stics. You can access the UL iQTM family of database of the control of the cont	and, to the be impurity cor- es to obtain a b hold the pa by Incorporat thip Technolo y Data Sheet ed by subco- significant to nished parts. aration. The of sale. The	est of Microcl ncentration of a test report a cking slip on ed's semicon ogy Incorpora ts provided by ntract assemi poxic metals co	t the outer ductor ated cannot y raw blers and omponents. ited product ed in	0.50	Silicon  (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	% of Total Weight 100 100.00 % of Total Weight 100.00	0.2

WHE 32 TSOP 10:34 AM : 5/6/2014

249.700

MICROCHIP Semiconductor Devi	ce Type: EIE 40 TSO	P 10x20mm (W8)	_	ination Base opper Alloy (				ogeneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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 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	a Total Mass						Total	100.00	
•	• •	02/95/EC (RoHS Directive), EU Directive 2011/65/EU	J (RoHS Reca	ast Directive) a	and with EU	8 75	(mg) Total	Chin (Die)	% of Total Weight	19
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 of hnology Incorporated's knowledge and belief as of the	). d via internal design controls, chemical substance is NOT ar date of this document, there	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidal	e and, to the	best of Micro	chip	8.75	(mg) Total Silicon	Chip (Die)  7440-21-3  Total	% of Total Weight 100 100.00	1.9
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 chnology incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 VO	).  d via internal design controls, themical substance is NOT ar date of this document, there egulatory concern for any reg flammability standard for pla	supplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidal gulatory scheme world-wide.	e and, to the	best of Micro	chip of the	1.29		7440-21-3	100	0.28
is semiconductor device and its nomogenous materials recetive 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 chology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of rolding 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 x and certain "reels" may be made from PVC plastic.	I. divia internal design controls, themical substance is NOT are date of this document, there egulatory concern for any reg flammability standard for planals/plastics/	supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidal gulatory scheme world-wide.  Stics. You can access the UL iQTM family of database.	e and, to the ble impurity o	best of Micro concentration	chip of the		Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive, mpliance with the above EU Directives has been verified to the common the list above, the chnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of rebiding compounds used by Microchip meet the UL94 V0 p://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shift and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the informatives in their original packing materials is true and correarantee the completeness and accuracy of data in this faterial suppliers. Supplier information is often protected w material suppliers. Information is provided only as estimaterial suppliers.	It via internal design controls, chemical substance is NOT ar date of this document, there egulatory concern for any reg flammability standard for planals/plastics/ pped are made from polyviny on in this form concerning suect to the best of its knowledgorm because it has been com from disclosure as trade secimates of the average weight	supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidal julatory scheme world-wide.  It chloride (PVC) plastic. "Window envelopes" used betances restricted by RoHS in Microchip Technoge and belief, as of the date listed in this form. Micropiled based on the ranges provided in Material Sarets and some information may not have been proof these parts and the average weight of anticipate	e and, to the ble impurity of asses to obtain to hold the logy Incorporachip Techrefety Data Shyided by sub ad significan	best of Micro concentration n a test report packing slip o rated's semic cology Incorposets provided contract asset t toxic metals	chip of the at n the outer onductor orated cannot by raw mblers and		Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	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 chinology Incorporated's knowledge and belief as of the smical substance, if any, is not below the threshold of religious compounds used by Microchip meet the UL94 V0 ct//ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shift and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the informativities in their original packing materials is true and corrurantee the completeness and accuracy of data in this feteral suppliers. Supplier information is often protected material suppliers. Information is provided only as estimates do not include trace levels of dopants, morochip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct warranties provided by Microchip Technology Incorporated does not provide any duct	In divide the control of the control	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidal julatory scheme world-wide.  Istics. You can access the UL iQTM family of databased in the control of	e and, to the ble impurity of asses to obtain to hold the logy Incorporachip Techrefety Data Shivided by suided significant of finished paraction. The accuracy of the second of the sec	best of Micro concentration n a test report packing slip o rated's semice ology Incorposets provided contract asset t toxic metals rts.	chip of the  at n the outer onductor orated cannot by raw mblers and components.		Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
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 chnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of republing compounds used by Microchip meet the UL94 V0 pp://ul.com/global/eng/pages/offerings/industries/chemice protective "tubes" in which the specific product is shi	It is internal design controls, themical substance is NOT are date of this document, there egulatory concern for any reg flammability standard for plastals/plastics/ pped are made from polyviny on in this form concerning sue to the best of its knowledger orm because it has been comfrom disclosure as trade sectimates of the average weight etals, and non-metal materials warranty, express or implied, orporated and its subsidiaries and invoices.  changes to Material Content the users' reliance on the info	supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidal gulatory scheme world-wide.  It chloride (PVC) plastic. "Window envelopes" used betances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Microphiled based on the ranges provided in Material Sarets and some information may not have been proof these parts and the average weight of anticipate is contained within silicon devices (silicon IC) in the with respect to the information provided in this design are contained in Microchip's standard terms and Declarations and shall not be liable for any damage	ee and, to the ble impurity of asses to obtain the hold the logy Incorporation of the logy Incorporation of the hold by subset significants of the conditions of the conditions of the logs of the log	best of Micro concentration n a test report packing slip o rated's semicciology Incorpo- sets provided contract asset t toxic metals rts.	chip of the  at  n the outer  onductor  orated cannot by raw mblers and components.  mited are provided equential or	1.29	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	100 100.00 % of Total Weight 100.00	0.28

EIE 40 TSOP 10:34 AM : 5/6/2014

MICROCHIP  Semiconductor Devic	e Type: EKE 48 TSOP 12	k20mm (W9)		nation Base pper Alloy (0	,		•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	24211	"Contained In"	% Total			377.31	(mg) Total	Mold Compound	% ot Total Weight	66.84
Basic Substance	CAS Number 60676-86-0	Sub-Component	Weight	mg/part	ppm		,	20070 20 2		1
Silica, vitreous (or fused)  Epoxy Resin	Trade Secret	Mold Compound  Mold Compound	56.814 5.815	320.715 32.826	568,140 58.151		Silica, vitreous (or fused)  Epoxy Resin	60676-86-0 Trade Secret	85.00 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		Carbon Black	Total	100.00	J
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	100.02	Copper	7440-50-8	95.24	20.00
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	7440-02-0	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	l
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	2.10	Silver	7440-22-4	80.00	0.50
Tin		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	
1111	7440-31-3 Flating (	TOTALS:	100.000	564.500	1.000.000		Copper	7440-50-8	3.00	
	0.5645 a To		100.000	304.500	1,000,000		Соррсі	Total	100.00	l
pliance with the above EU Directives has been verified chemical substance is absent from the list above, the ch nology Incorporated's knowledge and belief as of the d	nemical substance is NOT an inte	ntional ingredient in the semiconductor de credible reason to believe that the unavo	evice and, to				Silicon	7440-21-3 <b>Total</b>	100 <b>100.00</b>	
mical substance, if any, is not below the threshold of reg ding compounds used by Microchip meet the UL94 V0 fl	ammability standard for plastics.	•	tabases to ol	otain a test re	port at	1.81	(mg) Total	Wire Bond		
o://ui.com/giobal/eng/pages/offerings/industries/chemica							_		% of Total Weight	0.32
e protective "tubes" in which the specific product is ship		ride (PVC) plastic. "Window envelopes" ເ	used to hold t	the packing s	lip on the		Doped Gold	7440-57-5	100.00	0.32
e protective "tubes" in which the specific product is ship, ter box and certain "reels" may be made from PVC plastic crochip Technology Incorporated believes the information miconductor devices in their original packing materials is orporated cannot guarantee the completeness and accurate provided by raw material suppliers. Supplier informa contract assemblers and raw material suppliers. Informa nificant toxic metals components. These estimates do no	c.  n in this form concerning substar true and correct to the best of it- racy of data in this form because ation is often protected from disci	ices restricted by RoHS in Microchip Tecls knowledge and belief, as of the date list it has been compiled based on the range osure as trade secrets and some informa s of the average weight of these parts an	hnology Inco ed in this form s provided in tion may not d the average	rporated's m. Microchip Material Safe have been pr e weight of an	Technology ety Data ovided by ticipated		Doped Gold	7440-57-5 Total		0.32
p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship, ter box and certain "reels" may be made from PVC plastic crochip Technology Incorporated believes the information miconductor devices in their original packing materials is corporated cannot guarantee the completeness and accurate the standard suppliers. Supplier information becontract assemblers and raw material suppliers. Information inficant toxic metals components. These estimates do no e finished parts. crochip Technology Incorporated does not provide any we adduct warranties provided by Microchip Technology Incorporated in Microchip's quotations, sales order acknowledge povided in Microchip's quotations, sales order acknowledge.	n in this form concerning substar true and correct to the best of its racy of data in this form because ation is often protected from disclation is provided only as estimate of include trace levels of dopants, varranty, express or implied, with rporated and its subsidiaries are	nces restricted by RoHS in Microchip Tecls knowledge and belief, as of the date list it has been compiled based on the range osure as trade secrets and some information of these parts and metals, and non-metal materials containerspect to the information provided in this	hnology Inco ed in this fort s provided in tion may not d the average ed within silio	rporated's m. Microchip Material Safe have been pre weight of an con devices (s	Technology sty Data ovided by ticipated silicon IC) in	15.52			100.00	2.75
e protective "tubes" in which the specific product is ship, er box and certain "reels" may be made from PVC plastic rochip Technology Incorporated believes the information iniconductor devices in their original packing materials is orporated cannot guarantee the completeness and accurate sprovided by raw material suppliers. Supplier information product assemblers and raw material suppliers. Informatificant toxic metals components. These estimates do not finished parts.  Prochip Technology Incorporated does not provide any weduct warranties provided by Microchip Technology Incorporated in Microchip's quotations, sales order acknowledge.	n in this form concerning substar strue and correct to the best of its racy of data in this form because ation is often protected from disclation is provided only as estimate of include trace levels of dopants. varranty, express or implied, with rporated and its subsidiaries are gement, and invoices. changes to Material Content Deckes as a result of the users' reliance	nces restricted by RoHS in Microchip Tecls knowledge and belief, as of the date list it has been compiled based on the range osure as trade secrets and some interactions of the average weight of these parts an metals, and non-metal materials containerespect to the information provided in this contained in Microchip's standard terms a trations and shall not be liable for any date on the information in Material Content I	hnology Inco ed in this form is provided in tion may not d the average ed within silion is declaration and condition	rporated's m. Microchip Material Safe have been pr e weight of an con devices (s . The exclusiv as of sale. The	Technology by Data ovided by ticipated silicon IC) in ve, limited ese are	15.52		Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100.00	
e protective "tubes" in which the specific product is ship, ter box and certain "reels" may be made from PVC plastic prochip Technology Incorporated believes the information miconductor devices in their original packing materials is orporated cannot guarantee the completeness and accure provided by raw material suppliers. Supplier information trace and the same provided by a material suppliers. Information to the same provided and the same provided in Microchip's quotations, sales order acknowledge prochip disclaims any duty to notify users of updates or control of the same prochip disclaims and the same provided in the same provided and the same provided in the same	n in this form concerning substar true and correct to the best of its racy of data in this form because ation is often protected from discl ation is provided only as estimate of include trace levels of dopants. warranty, express or implied, with reporated and its subsidiaries are gement, and invoices.	nces restricted by RoHS in Microchip Tecls knowledge and belief, as of the date list it has been compiled based on the range osure as trade secrets and some information of the average weight of these parts an metals, and non-metal materials contained respect to the information provided in this contained in Microchip's standard terms a trations and shall not be liable for any date	hnology Inco ed in this form is provided in tion may not d the average ed within silion is declaration and condition	rporated's m. Microchip Material Safe have been pr e weight of an con devices (s . The exclusiv as of sale. The	Technology by Data ovided by ticipated silicon IC) in ve, limited ese are	15.52	(mg) Total	Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.00  100.00  % of Total Weight	

EKE 48-TSOP 10:35 AM : 5/6/2014

MICROCHIP  Semiconductor Device	Type: AB 03 (Lead)	TO-220 (F8)		nation Base A pper Alloy (C	. ,		•	ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			536.44	(mg) Total	Mold Compound	% ot Total Weight	28.38
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	536.44	(mg) i otai	•	% of Total Weight	20.36
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	1333-86-4	Mold Compound	0.071	1.341	710		Carbon Black	1333-86-4	0.25	
Misc.	Trade Secret	Mold Compound	0.284	5.364	2,838		Undeclared	Trade Secret	1.00	
Copper	7440-50-8	Lead Frame	68.874	1301.860	688,742			Total	100.00	
Tin	7440-31-5	Lead Frame	0.116	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 (Aq)	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		Silver	7440-22-4	1.91	
					24	Į.	Slivei	Total		
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.002	0.045						
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 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	Proprietary	Curing agent & Hardener	Trade Secret	3	
	1 0002	T . 4 . 1 MA								
semiconductor device and its homogenous materials co		g Total Mass	(RoHS Recas	t Directive) and	d with FII			Total	100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recasi	t Directive) and	d with EU	11.34	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	0.6
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified victories with the above the chemical substance is absent from the list above, the che unology Incorporated's knowledge and belief as of the danical substance, if any, is not below the threshold of regulations.	mply with EU Directive 2 ia internal design control mical substance is NOT tte of this document, thei alatory concern for any re	002/95/EC (RoHS Directive), EU Directive 2011/65/EU is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidab egulatory scheme world-wide.	and, to the b le impurity co	est of Microch	ip the	11.34		Chip (Die)	% of Total Weight	0.6
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Ipliance with the above EU Directives has been verified victories with the above EU Directives has been verified victories and substance is absent from the list above, the chanology Incorporated's knowledge and belief as of the danical substance, if any, is not below the threshold of regulting compounds used by Microchip meet the UL94 Vo flar	mply with EU Directive 2 ia internal design control mical substance is NOT ite of this document, thei ulatory concern for any re	002/95/EC (RoHS Directive), EU Directive 2011/65/EU is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidab egulatory scheme world-wide.	and, to the b le impurity co	est of Microch	ip the	0.95		Chip (Die) 7440-21-3	% of Total Weight	0.6
ictive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified victories and substance is absent from the list above, the che hnology Incorporated's knowledge and belief as of the damical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flatiful.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shippy	mply with EU Directive 2 ia internal design control mical substance is NOT tte of this document, the ulatory concern for any re mmability standard for pl t/plastics/	002/95/EC (RoHS Directive), EU Directive 2011/65/EU is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidab egulatory scheme world-wide.  lastics. You can access the UL iQTM family of databa	e and, to the b le impurity co ses to obtain a	est of Microch ncentration of a test report at	ip the		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
is semiconductor device and its homogenous materials co- ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified vi- chemical substance is absent from the list above, the che chnology Incorporated's knowledge and belief as of the da emical substance, if any, is not below the threshold of regu- lding compounds used by Microchip meet the UL94 V0 flat p://ul.com/global/eng/pages/offerings/industries/chemicals er protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  Errochip Technology Incorporated believes the information fices in their original packing materials is true and correct arantee the completeness and accuracy of data in this forr terial suppliers. Supplier information is often protected fro terial suppliers. Information is provided only as estimates uses estimates do not include trace levels of dopants, meta	mply with EU Directive 2 ia internal design control mical substance is NOT ite of this document, the ulatory concern for any r mmability standard for pl l/plastics/ ed are made from polyvii in this form concerning to the best of its knowle n because it has been co m disclosure as trade se of the average weight of	002/95/EC (RoHS Directive), EU Directive 2011/65/EU is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable egulatory scheme world-wide.  lastics. You can access the UL iQTM family of databative in the control of	e and, to the b le impurity co ses to obtain a to hold the pa ogy Incorpora ochip Technol ety Data Shee dided by subco gnificant toxic	est of Microch ncentration of a test report at acking slip on a ted's semicon- logy Incorpora ts provided by outract ascompt metals compora	ip the the outer ductor ted cannot rraw lers and raw		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 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 vi  chemical substance is absent from the list above, the che  chnology Incorporated's knowledge and belief as of the da  amical substance, if any, is not below the threshold of regulding compounds used by Microchip meet the UL94 V0 flat  p://ul.com/global/eng/pages/offerings/industries/chemicals  approtective "tubes" in which the specific product is shipped  and certain "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the information  vices in their original packing materials is true and correct  arantee the completeness and accuracy of data in this for  terial suppliers. Supplier information is often protected fro  terial suppliers. Information is provided only as estimates	mply with EU Directive 2 ia internal design control mical substance is NOT the of this document, thei altarry concern for any r mmability standard for pl //plastics/ ed are made from polyvir in this form concerning a to the best of its knowle m because it has been co m disclosure as trade se of the average weight of s, and non-metal materia rrranty, express or implie and its subsidiaries are co	1002/95/EC (RoHS Directive), EU Directive 2011/65/EU  Is, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidab egulatory scheme world-wide.  Iastics. You can access the UL iQTM family of databa  myl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technol dge and belief, as of the date listed in this form. Micro mpiled based on the ranges provided in Material Saf cerets and some information may not have been prov these parts and the average weight of anticipated sig als contained within silicon devices (silicon IC) in the d, with respect to the information provided in this dev	e and, to the b le impurity co ses to obtain a to hold the pa pgy Incorpora schip Technol ety Data Shee dided by subco gnificant toxic finished parts claration. The	est of Microch ncentration of a test report at acking slip on a ted's semicon- logy Incorpora ts provided by outract assemb metals compo- ic.	the outer ductor ted cannot raw shers and raw shents.		Doped 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	
inctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified vice themical substance is absent from the list above, the che hnology Incorporated's knowledge and belief as of the damical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 flatiful.com/global/eng/pages/offerings/industries/chemicals protective "tubes" in which the specific product is shippe and certain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information icies in their original packing materials is true and correct rantee the completeness and accuracy of data in this for rerial suppliers. Supplier information is often protected froerial suppliers. Information is provided only as estimates se estimates do not include trace levels of dopants, metal rochip Technology Incorporated does not provide any was ranties provided by Microchip Technology Incorporated as the standard of the control of the provided only incorporated as the provided and the provided only incorporated as the provided only incorporat	mply with EU Directive 2 ia internal design control mical substance is NOT te of this document, the ulatory concern for any re mmability standard for ple i/plastics/ ed are made from polyvir in this form concerning to the best of its knowle m because it has been co im disclosure as trade se of the average weight of ls, and non-metal materia rranty, express or implie ind its subsidiaries are co voices.  langes to Material Conter users' reliance on the ir	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable egulatory scheme world-wide.  Iastics. You can access the UL iQTM family of databanyl chloride (PVC) plastic. "Window envelopes" used substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Microchipplied based on the ranges provided in Material Safects and some information may not have been provides parts and the average weight of anticipated signals contained within silicon devices (silicon IC) in the d, with respect to the information provided in this devontained in Microchip's standard terms and condition to Declarations and shall not be liable for any damagent.	e and, to the ble impurity co ses to obtain a to hold the pa ogy Incorporate ochip Technol ety Data Shee ided by subco gnificant toxic finished parts claration. The us of sale. The	est of Microch ncentration of a test report at acking slip on the ted's semiconology Incorpora ts provided by intract assemb metals composi- exclusive, limi se are provide direct, conseq	ip the the outer ductor ted cannot rraw elers and raw enents.	0.95	Doped Silicon  (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	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.05

AB 3 TO-220 10:35 AM : 5/6/2014

100.000

MICROCHIP				ation Base A				ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Ty	ype: AT 05 (Lea	d) TO-220 (B8)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	
Misc.	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	Proprietar	y Curing agent & Hardener	Trade Secret	3	
	1.9839	g Total Mass						Total	100.00	_
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via in	nternal design controls	s, supplier declarations, and /or analytical test data.				12.30	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	
If a chemical substance is absent from the list above, the chemic Incorporated's knowledge and belief as of the date of this docum any, is not below the threshold of regulatory concern for any reg	nent, there is no credib	le reason to believe that the unavoidable impurity cond						Total	100.00	
lolding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pla		stics. You can access the UL iQTM family of databases	s to obtain a te	st report at		0.79	(mg) Total	Wire Bond	% of Total Weight	0.04
he protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.	are made from polyviny	yl chloride (PVC) plastic. "Window envelopes" used to	hold the packi	ng slip on the	outer box		Doped Gold	7440-57-5	100	
·								Total	100.00	
	his form concerning su							I Oldi		
n their original packing materials is true and correct to the best the completeness and accuracy of data in this form because it h Supplier information is often protected from disclosure as trade nformation is provided only as estimates of the average weight	of its knowledge and b as been compiled base secrets and some info of these parts and the	elief, as of the date listed in this form. Microchip Techn d on the ranges provided in Material Safety Data Sheet rmation may not have been provided by subcontract as average weight of anticipated significant toxic metals c	nology Incorpo ts provided by ssemblers and	rated cannot o raw material s raw material s	juarantee uppliers. suppliers.				100.00	
Microchip Technology Incorporated believes the information in t in their original packing materials is true and correct to the best the completeness and accuracy of data in this form because it h Supplier information is often protected from disclosure as trade Information is provided only as estimates of the average weight include trace levels of dopants, metals, and non-metal materials Microchip Technology Incorporated does not provide any warrar warranties provided by Microchip Technology Incorporated and quotations, sales order acknowledgement, and invoices.	of its knowledge and b as been compiled base secrets and some info of these parts and the contained within silico nty, express or implied,	belief, as of the date listed in this form. Microchip Techn ad on the ranges provided in Material Safety Data Sheet rmation may not have been provided by subcontract as average weight of anticipated significant toxic metals on devices (silicon IC) in the finished parts.  with respect to the information provided in this declar	nology Incorports provided by ssemblers and components. To ration. The exc	rated cannot g raw material s raw material s nese estimates usive, limited	juarantee uppliers. suppliers. s do not product	11.31	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	
in their original packing materials is true and correct to the best the completeness and accuracy of data in this form because it h Supplier information is often protected from disclosure as trade Information is provided only as estimates of the average weight include trace levels of dopants, metals, and non-metal materials Microchip Technology Incorporated does not provide any warran warranties provided by Microchip Technology Incorporated and	of its knowledge and b as been compiled base secrets and some info of these parts and the contained within silico nty, express or implied, its subsidiaries are cor ges to Material Content sers' reliance on the inf	belief, as of the date listed in this form. Microchip Techned on the ranges provided in Material Safety Data Sheet mation may not have been provided by subcontract as average weight of anticipated significant toxic metals con devices (silicon IC) in the finished parts.  The with respect to the information provided in this declar nationed in Microchip's standard terms and conditions of the Declarations and shall not be liable for any damages,	nology Incorports provided by seemblers and components. The action. The excut sale. These addirect or indirect or indirect.	rated cannot of raw material seraw material seraw material seraw estimates lusive, limited re provided in ct, consequen	juarantee uppliers. suppliers. s do not product Microchip's	11.31	(mg) Total	(pins) - Matte Tin / annealed at 150°C for 1		

AT 5 TO-220 10:35 AM: 5/6/2014

1,983.900

MICROCHIP  Somiconductor Dovin	ce Type: PT 32 (Lead) T	OEB 7-7-4 (T5)		nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, display	/s)	JEDEC 97 Produ Marking and/or Pkg. Labeling e3
Semiconductor Devic	ce Type. PI 32 (Lead) I	` ,	0/ <del>T</del> -/-l							
		"Contained In" Sub-Component	% Total Weight			269.96	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	•		mg/part	ppm		T			
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 Carbon Black	Trade Secret 1333-86-4	Mold Compound Mold Compound	4.788 0.239	16.198 0.810	47,880 2,394		Phenolic Resin Carbon Black	Trade Secret 1333-86-4	6.00 0.30	
	7440-50-8		10.229	34.603	102,286		Carbon Black	1333-86-4 Total		
Copper Tin	7440-31-5	Lead Frame	0.026	0.089	263	05.50	() T.(.)			40.5
		Lead Frame				35.52	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.677	2,000		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.019	0.064	189		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.026	0.089	263		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.623	2.106	6,225		Zinc	7440-66-6	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.068	0.228	675		Chromium	7440-47-3	0.25	
EPOXY RESIN	Trade Secret	Die Attach	0.060	0.203	600			Total	100.00	
Silicon	7440-21-3	Chip (Die)	7.500	25.373	75,000	2.54	(mg) Total	Die Attach	% of Total Weight	0.75
Gold	7440-57-5	Wire Bond	0.200	0.677	2,000		Silver (Ag)	7440-22-4	83	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.229	12,500		ANHYDRIDE	Trade Secret	9	
		TOTALS:	100.000	338.300	1,000,000		EPOXY RESIN	Trade Secret	8	
	0.0000	Total Mass						Total	100.00	
	comply with EU Directive 2002	Total Mass /95/EC (RoHS Directive), EU Directive 2011/65/EU (R	oHS Recast D	irective) and w	rith EU	25.37	Total (mg)	Chip (Die)	% of Total Weight	7.5
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 cl  rporated's knowledge and belief as of the date of this d	via internal design controls, s hemical substance is NOT an iocument, there is no credible	.95/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device a reason to believe that the unavoidable impurity con-	nd, to the best	of Microchip	Technology	25.37	Total (mg)  Doped Silicon	1		7.5
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 clarporated'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 file.	via internal design controls, s hemical substance is NOT an i locument, there is no credible by regulatory scheme world-wi	95/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device a reason to believe that the unavoidable impurity condide.	nd, to the best centration of th	of Microchip he chemical su	Technology	25.37	1	Chip (Die) 7440-21-3	% of Total Weight	7.5
citive 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 clorporated'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	via internal design controls, s hemical substance is NOT an i locument, there is no credible ly regulatory scheme world-wi lammability standard for plast lls/plastics/	195/EC (RoHS Directive), EU Directive 2011/65/EU (R supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device a reason to believe that the unavoidable impurity conduct. ics. You can access the UL iQTM family of database	nd, to the best centration of the	t of Microchip he chemical su est report at	Technology ubstance, if		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight  100  100.00  % of Total Weight  100	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the clorporated's knowledge and belief as of the date of this directive, is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 V0 flo://ul.com/global/eng/pages/offerings/industries/chemicate protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the informationeir original packing materials is true and correct to the completeness and accuracy of data in this form becaus polier information is often protected from disclosure as termation is provided only as estimates of the average we	via internal design controls, s hemical substance is NOT an i ocument, there is no credible yr regulatory scheme world-wi lammability standard for plast lls/plastics/ upped are made from polyvinyl n in this form concerning sub- best of its knowledge and bel e it has been compiled based rade secrets and some inform eight of these parts and the av	JOS/EC (ROHS Directive), EU Directive 2011/65/EU (Roupplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device at reason to believe that the unavoidable impurity concide.  Ics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to stances restricted by RoHS in Microchip Technology ief, as of the date listed in this form. Microchip Tech on the ranges provided in Material Safety Data Shee nation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or a supplementation and the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract a erage weight of anticipated significant toxic metals or the supplementation may not have been provided by subcontract and supplementation may not have been provided by subcont	nd, to the best centration of the s to obtain a to hold the pack Incorporated nology Incorporated semblers and	t of Microchip he chemical su est report at ing slip on the 's semiconduc orated cannot y raw material	Technology obstance, if outer box outer box ottor devices guarantee suppliers. suppliers.		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
s semiconductor device and its homogenous materials of sective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the clorporated's knowledge and belief as of the date of this digital to the compounds used by Microchip meet the UL94 V0 floct/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic. Trochip Technology Incorporated believes the information heir 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 truntation 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 wranties provided by Microchip Technology Incorporated tations, sales order acknowledgement, and invoices.	via internal design controls, s hemical substance is NOT an i ocument, there is no credible y regulatory scheme world-wi lammability standard for plast lls/plastics/ upped are made from polyvinyl of n in this form concerning sub- best of its knowledge and bel e it has been compiled based e it has been compiled based grade secrets and some inform eight of these parts and the av erials contained within silicon- varranty, express or implied, w	Jays/EC (RoHS Directive), EU Directive 2011/65/EU (Roupplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device as reason to believe that the unavoidable impurity concide.  Ics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to stances restricted by RoHS in Microchip Technology ief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Shee aution may not have been provided by subcontract a erage weight of anticipated significant toxic metals and devices (silicon IC) in the finished parts.	nd, to the best centration of the s to obtain a te hold the pack r incorporated nology incorpor ts provided by ssemblers and components. I	est report at ing slip on the 's semiconduc orated cannot raw material d raw material f hese estimate	Technology ibstance, if outer box et or devices guarantee suppliers. suppliers. si do not		(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	
netive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified chemical substance is absent from the list above, the clopporated's knowledge and belief as of the date of this 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.  Trochip Technology Incorporated believes the informationeir 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 trunation is provided only as estimates of the average we ude trace levels of dopants, metals, and non-metal materocchip Technology Incorporated does not provide any we ranties provided by Microchip Technology Incorporated	via internal design controls, s hemical substance is NOT an i locument, there is no credible ly regulatory scheme world-wi lammability standard for plast ls/plastics/ loped are made from polyvinyl in in this form concerning sub- best of its knowledge and bel le it has been compiled based is that been compiled based is that been compiled based is that seen some inform legith of these parts and the avertals contained within silicon varranty, express or implied, w and its subsidiaries are conte- changes to Material Content D he users' reliance on the infor	ps/EC (RoHS Directive), EU Directive 2011/65/EU (Rospiece (RoHS Directive), EU Directive 2011/65/EU (Rospiece (RoHS Directive), EU Directive 2011/65/EU (Rospiece (Rospiece)), and /or analytical test data. Intentional ingredient in the semiconductor device areason to believe that the unavoidable impurity concide.  ics. You can access the UL iQTM family of database chloride (PVC) plastic. "Window envelopes" used to stances restricted by RoHS in Microchip Technology lef, as of the date listed in this form. Microchip Technology lef, as of the date listed in this form. Microchip Technology lef, as of the date listed in this form. Microchip Technology lef, as of the date listed in this form. Microchip Technology lef, as of the date listed in this form. Microchip of anticipated significant toxic metals of devices (silicon IC) in the finished parts.	nd, to the best centration of the s to obtain a technology incorporated nology incorporated to provided by seemblers and components. The exist of sale. These direct or indirect	est report at ing slip on the 's semiconduc orated cannot r raw material f raw material f hese estimate are provided i ect, conseque	Technology ubstance, if  outer box eter devices guarantee suppliers. suppliers. es do not  I product n Microchip's	0.68	(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 100 100.00	0.2

PT 32 TQFP 10:36 AM : 5/6/2014

MICROCHIP				nation Base A pper Alloy (C	,			geneous Materials: g. pc boards, display:	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e: PT 44 (Lead) TQFP	10x10x1mm (T4/TY)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	218.09	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	189.545	693.542		Silica, vitreous	60676-86-0	86.91	ì
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	16.728	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	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	100.00	<u>I</u>
Nickel	7440-02-0	Lead Frame	0.267	0.729	2.667	28.70	(mg) Total	Lead Frame	% of Total Weight	
Silver	7440-22-4	Lead Frame	0.175	0.479	1,752	20.70	Copper	7440-50-8	95.24	10.5
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	7440-02-0	1.67	
Silver (Aa)	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		magnociani	Total	100.00	1
Gold	7440-57-5	Wire Bond	0.200	0.547	2,000	2.05	(mg) Total	Die Attach	% of Total Weight	
Tin		n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.416	12.500	2.05	Silver (Ag)	7440-22-4	80	0.75
IIII	7440-31-3 Plating or	TOTALS:	100.000	273.300	1,000,000		Acrylate Urethane Oligomer	General	20	
	0.0700 T		100.000	275.500	1,000,000	P	crylate Orethane Oligomen	Total	100.00	I
	0.2733 g Tot	tai Mass						lotai	100.00	
is semiconductor device and its homogenous materials comp	y with EU Directive 2002/95/	FC (RoHS Directive) FII Directive 2011/65/FII	(PoHS Page	t Directive) an	d with EII					
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	•	20 (None Biredive), 20 Biredive 2017/00/20	(Nono Necas	t Directive) an	u with EU	20.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified via ir		olier declarations, and /or analytical test data.	`	ŕ	-	20.50	Total (mg)  Doped Silicon	7440-21-3	100	
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic achnology Incorporated's knowledge and belief as of the date of hemical substance, if any, is not below the threshold of regulate	al substance is NOT an inte of this document, there is no ory concern for any regulato	olier declarations, and /or analytical test data.  Intional ingredient in the semiconductor device credible reason to believe that the unavoidatory scheme world-wide.	e and, to the b	est of Microch	iip the	20.50	•	,		
, , , ,	al substance is NOT an inte of this document, there is no ory concern for any regulato ability standard for plastics.	olier declarations, and /or analytical test data.  Intional ingredient in the semiconductor device credible reason to believe that the unavoidatory scheme world-wide.	e and, to the b	est of Microch	iip the	0.55	•	7440-21-3	100	
ompliance with the above EU Directives has been verified via ir a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date on hemical substance, if any, is not below the threshold of regulate olding compounds used by Microchip meet the UL94 V0 flamm	al substance is NOT an inte of this document, there is no ory concern for any regulato ability standard for plastics. stics/	plier declarations, and /or analytical test data.  Intional ingredient in the semiconductor devic  credible reason to believe that the unavoidat  ory scheme world-wide.  You can access the UL iQTM family of databa	e and, to the b le impurity co	est of Microch ncentration of a test report a	nip the		Doped Silicon	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	0.2
ompliance with the above EU Directives has been verified via ir a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date of hemical substance, if any, is not below the threshold of regulate olding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped a	al substance is NOT an inter if this document, there is no ory concern for any regulato ability standard for plastics. stics/ ire made from polyvinyl chlor his form concerning substante he best of its knowledge and cause it has been compiled isclosure as trade secrets a of the average weight of the	plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device credible reason to believe that the unavoidatory scheme world-wide.  You can access the UL iQTM family of databatoride (PVC) plastic. "Window envelopes" used inces restricted by RoHS in Microchip Technol d belief, as of the date listed in this form. Microl based on the ranges provided in Material Satund some information may not have been provides parts and the average weight of anticipate	e and, to the b le impurity co ses to obtain to hold the pa ogy Incorpora ochip Technol ety Data Shee tided by subccd d significant t	nest of Microck ncentration of a test report a acking slip on ted's semicon logy Incorpora ts provided by intract assemi oxic metals co	the the outer ductor ted cannot r r aw olers and		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight	0.2
ompliance with the above EU Directives has been verified via ir a chemical substance is absent from the list above, the chemic schnology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regulational compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped a pox and certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information in the evices in their original packing materials is true and correct to luarantee the completeness and accuracy of data in this form but alterial suppliers. Supplier information is often protected from own waterial suppliers. Supplier information is provided only as estimates the material suppliers. Information is provided only as estimates.	al substance is NOT an inter if this document, there is no ory concern for any regulato ability standard for plastics. stics/ ire made from polyvinyl chlor his form concerning substanthe best of its knowledge and cause it has been compiled isclosure as trade secrets a of the average weight of the not non-metal materials confuty, express or implied, with ts subsidiaries are containe	polier declarations, and /or analytical test data. Intional ingredient in the semiconductor device credible reason to believe that the unavoidatory scheme world-wide.  You can access the UL iQTM family of databatoride (PVC) plastic. "Window envelopes" used notes restricted by RoHS in Microchip Technol delief, as of the date listed in this form. Microblem information may not have been provises parts and the average weight of anticipate tained within silicon devices (silicon IC) in the respect to the information provided in this de	e and, to the belle impurity conses to obtain to hold the parts of the	est of Microch ncentration of a test report a acking slip on ted's semicon logy Incorpora ts provided by intract assemi oxic metals co	t the outer ductor ted cannot raw olers and imponents.		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	0.2
ompliance with the above EU Directives has been verified via ir a chemical substance is absent from the list above, the chemic schnology Incorporated's knowledge and belief as of the date elemical substance, if any, is not below the threshold of regulate olding compounds used by Microchip meet the UL94 V0 flamm tp://ul.com/global/eng/pages/offerings/Industries/chemicals/plane protective "tubes" in which the specific product is shipped above and certain "reels" may be made from PVC plastic. Icrochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to uarantee the completeness and accuracy of data in this form baterial suppliers. Supplier information is often protected from the waterial suppliers. Information is provided only as estimates ese estimates do not include trace levels of dopants, metals, a icrochip Technology Incorporated does not provide any warrantranties provided by Microchip Technology Incorporated and	al substance is NOT an inter if this document, there is no pry concern for any regulator ability standard for plastics, stics/  are made from polyvinyl chloring substant in the best of its knowledge and accause it has been compiled isclosure as trade secrets a of the average weight of the ind non-metal materials contry, express or implied, with its subsidiaries are contained ces.	plier declarations, and /or analytical test data. Intional ingredient in the semiconductor device credible reason to believe that the unavoidabory scheme world-wide.  You can access the UL iQTM family of databatoride (PVC) plastic. "Window envelopes" used inces restricted by RoHS in Microchip Technol did belief, as of the date listed in this form. Micro I based on the ranges provided in Material Saland some information may not have been provise parts and the average weight of anticipate tained within silicon devices (silicon IC) in the respect to the information provided in this dead in Microchip's standard terms and conditionarations and shall not be liable for any damage	e and, to the belle impurity consess to obtain to hold the part ochip Technol ety Data Shee ided by subcod significant to finished parts claration. The las of sale. The es, direct or in	nest of Microch ncentration of a test report a ncking slip on ted's semicon logy Incorpora ts provided by ontract assemi oxic metals co is. exclusive, lim isse are provide direct, consec	the outer the outer ductor ted cannot r raw olers and imponents. ited product dd in	0.55	Doped 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	100 100.00 % of Total Weight 100 100.00	0.2

PT 44 TQFP 10:36 AM : 5/6/2014

Міскоснір				ination Base opper Alloy (C	•			ogeneous Materials: e.g. pc boards, displays	)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Devi	ce Type: 48 TQFP 7x7x1.4 JE									e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% lotal 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	1
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			Total	100.00	<b>3</b>
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	02.01	Copper	7440-50-8	95.24	300
Silicon	7440-21-3	Lead Frame	0.158	0.279	1,584		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.035	0.062	352		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.930	1.640	9,300		Silicon	7440-21-3	0.45	1
Epoxy Resin	Trade secret	Die Attach	0.310	0.547	3,100		Magnesium	7439-95-4	0.10	
Silicon	7440-21-3	Chip (Die)	3.570	6.294	35,700		Wagnesiam	Total	100.00	<u></u>
Gold	7440-57-5	Wire Bond	0.230	0.405	2,300	2.19	(mg) Total	Die Attach	% of Total Weight	
						2.19				1.24
Tin	7440-31-5 Plating	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 25.00	
		TOTALS:	100.000	176.300	1,000,000		Epoxy Resin	Trade secret		
	0.1763 g To							Total	100.00	
is semiconductor device and its homogenous m ective 2002/53/EC (End-of-Life Vehicles (ELV) Di	aterials comply with EU Directive 2	tal Mass 002/95/EC (RoHS Directive), EU Directive 2011/65/E	U (RoHS Reca	ast Directive) a	and with EU	6.29	(mg) Total			
ective 2002/53/EC (End-of-Life Vehicles (ELV) Di	aterials comply with EU Directive 2 rective).		•	ast Directive) a	and with EU	6.29	(mg) Total  Doped Silicon	Total	100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Di mpliance with the above EU Directives has been chemical substance is absent from the list abov chnology incorporated's knowledge and belief as	aterials comply with EU Directive 2 rective).  verified via internal design control re, the chemical substance is NOT is of the date of this document, ther	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	ce and, to the	best of Micro	chip	6.29	· •	Total Chip (Die)	100.00 % of Total Weight	3.57
ective 2002/53/EC (End-of-Life Vehicles (ELV) Di mpliance with the above EU Directives has been chemical substance is absent from the list above chnology incorporated's knowledge and belief as emical substance, if any, is not below the thresh diding compounds used by Microchip meet the U	aterials comply with EU Directive 2 rective).  verified via internal design control re, the chemical substance is NOT is so f the date of this document, therold of regulatory concern for any re L94 V0 flammability standard for pi	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	ce and, to the	best of Micro	chip of the	6.29	· •	Total Chip (Die) 7440-21-3	% of Total Weight	3.57
ective 2002/53/EC (End-of-Life Vehicles (ELV) Di mpliance with the above EU Directives has been chemical substance is absent from the list about chnology incorporated's knowledge and belief are emical substance, if any, is not below the thresh iding compounds used by Microchip meet the p://ul.com/global/eng/pages/offerings/industries.	aterials comply with EU Directive 2 rective).  verified via internal design control ve, the chemical substance is NOT as of the date of this document, the rold of regulatory concern for any results of the date of the date of the concern for any results of the control of the c	002/95/EC (RoHS Directive), EU Directive 2011/65/E  is, 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.	ce and, to the ble impurity o	best of Micro concentration	chip of the		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	3.57
ective 2002/53/EC (End-of-Life Vehicles (ELV) Di mpliance with the above EU Directives has been chemical substance is absent from the list above chnology incorporated's knowledge and belief as emical substance, if any, is not below the thresh diding compounds used by Microchip meet the U p://ul.com/global/eng/pages/offerings/industries, e protective "tubes" in which the specific produr x and certain "reels" may be made from PVC pla crochip Technology Incorporated believes the in vices in their original packing materials is true ar arantee the completeness and accuracy of data is terial suppliers. Supplier information is often pro v material suppliers. Information is provided only	aterials comply with EU Directive 2 rective).  verified via internal design control ve, the chemical substance is NOT is of the date of this document, the old of regulatory concern for any re L94 V0 flammability standard for pichemicals/plastics/ ct is shipped are made from polyvinstic.  formation in this form concerning indicorrect to the best of its knowled in this form because it has been condected from disclosure as trade set y as estimates of the average weigt	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 gulatory scheme world-wide. lastics. You can access the UL iQTM family of datal	ce and, to the ble impurity of pases to obtained to hold the pology Incorporation Technifety Data She wided by subted significan	best of Microconcentration in a test report packing slip o prated's semicology Incorpo- posts provided be contract asset	chip of the  at the outer conductor rated cannot by raw mblers and		Doped Silicon  (mg) Total	Total Chip (Die) 7440-21-3 Total Wire Bond	100.00 % of Total Weight 100 100.00 % of Total Weight	3.57
ective 2002/53/EC (End-of-Life Vehicles (ELV) Di  mpliance with the above EU Directives has been  chemical substance is absent from the list above  chnology incorporated's knowledge and belief as  emical substance, if any, is not below the thresh  iding compounds used by Microchip meet the Up://ul.com/global/eng/pages/offerings/industries,  e protective "tubes" in which the specific product  and certain "reels" may be made from PVC plate  crochip Technology Incorporated believes the in  vices in their original packing materials is true as  arantee the completeness and accuracy of data is  terial suppliers. Supplier information is often provided only  material suppliers. Information is provided only  mponents. These estimates do not include trace  crochip Technology Incorporated does not provi-	aterials comply with EU Directive 2 rective).  verified via internal design control ver, the chemical substance is NOT is of the date of this document, ther old of regulatory concern for any re L94 V0 flammability standard for pi (chemicals/plastics/ tt is shipped are made from polyvir stic.  formation in this form concerning ind correct to the best of its knowled in this form because it has been contected from disclosure as trade see y as estimates of the average weigh levels of dopants, metals, and non de any warranty, express or implier opy Incorporated and its subsidiari	002/95/EC (RoHS Directive), EU Directive 2011/65/E is, 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. lastics. You can access the UL iQTM family of datal nyl chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Technic dge and belief, as of the date listed in this form. Mic mpiled based on the ranges provided in Material Sa crets and some information may not have been pro tof these parts and the average weight of anticipa	ce and, to the ble impurity of coases to obtained to hold the cology Incorportochip Technifety Data Shevided by subted significan illicon IC) in the celeration. The	best of Microconcentration in a test report packing slip or rated's semicology Incorposets provided is contract asset toxic metals he finished particle exclusive, limited toxic metals he finished particle exclusive, limited toxic metals and the exclusive, limited toxic metals are exclusive, limited toxic metals and the exclusive, limited toxic metals are exclusive and exclusive toxic metals are exclusive toxic met	chip of the  at at an the outer conductor rated cannot by raw mblers and rts. mited		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	0.23
ective 2002/53/EC (End-of-Life Vehicles (ELV) Di  mpliance with the above EU Directives has been  chemical substance is absent from the list above  choology incorporated's knowledge and belief as  mical substance, if any, is not below the thresh  iding compounds used by Microchip meet the U  pz/ULL.com/global/eng/pages/offerings/industries,  e protective "tubes" in which the specific product  and certain "reels" may be made from PVC pla  crochip Technology incorporated believes the in  vices in their original packing materials is true at  arantee the completeness and accuracy of data is  terial suppliers. Supplier information is often proving  moments. These estimates do not include trace  crochip Technology Incorporated does not proving  duct warranties provided by Microchip's quotations, sales order acknowledge  crochip disclaims any duty to notify users of upc	aterials comply with EU Directive 2 rective).  verified via internal design control verified of this document, there old of regulatory concern for any real L94 V0 flammability standard for pichemicals/plastics/ ct is shipped are made from polyviristic.  formation in this form concerning and correct to the best of its knowled in this form because it has been concerted from disclosure as trade set y as estimates of the average weight levels of dopants, metals, and non de any warranty, express or implied ogy Incorporated and its subsidiariement, and invoices.  lates or changes to Material Contersuit of the users' reliance on the in	s, supplier declarations, and /or analytical test data in intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidagulatory scheme world-wide. lastics. You can access the UL iQTM family of datal nyl chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Technidge and belief, as of the date listed in this form. Micmpiled based on the ranges provided in Material Sacrets and some information may not have been provided in the properties of the separats and the average weight of anticular-metal materials contained within silicon devices (st., with respect to the information provided in this of, with respect to the information provided in this of, with respect to the information provided in this of, with respect to the information provided in this of,	ce and, to the ble impurity of pases to obtained to hold the cology Incorporate Technifety Data She wided by subted significan illicon IC) in the claration. The conditions of	best of Microconcentration in a test report packing slip of practed's semicology Incorporates provided to contract asset toxic metals he finished pane exclusive, lip of sale. These a indirect, cons	chip of the  at at an the outer conductor rated cannot by raw mblers and rts. mited are provided equential or	0.41	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	0.23

MatteTin Template 10:36 AM : 5/6/2014

MICROCHIP  Semiconductor Device Type	e: PT 64 (Lead)	TQFP 10x10x1mm (V2/VG)		nation Base A	•		•	ogeneous Materials: .g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			228.79	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	220.73	(ilig) rotai		78 Ot 1 Otal Weight	79.0
Silica, vitreous	60676-86-0	Mold Compound	69.354	198.838	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	17.548	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	11.691	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.709	2,474		Carbon Black	1333-86-4	0.31	
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		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.135	473		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.011	0.030	105		Silver	7440-22-4	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.600	1.720	6,000		Silicon	7440-21-3	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.430	1,500		Magnesium	7439-95-4	0.10	
Silicon	7440-21-3	Chip (Die)	7.500	21.503	75,000			Total	100.00	1
Gold	7440-57-5	Wire Bond	0.200	0.573	2,000	2.15	(mg) Total	Die Attach	% of Total Weight	0.75
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.584	12.500		Silver (Ag)	7440-22-4	80	
•		TOTALS:	100.000	286.700	1,000,000		Acrylate Urethane Oligomer	General	20	
	0.2867	g Total Mass			1,000,000	,	toryiate eretriane engerner	Total	100.00	1
s semiconductor device and its homogenous materials comply ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/	EU (RoHS Rec	ast Directive)	and with EU	21.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
							_;			
•	ū	, ,,					Doped Silicon	7440-21-3	100	
. chemical substance is absent from the list above, the chemica chnology incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulator ding compounds used by Microchip meet the UL94 V0 flamma	al substance is NOT this document, the ry concern for any re bility standard for pl	an intentional ingredient in the semiconductor develor is no credible reason to believe that the unavoice agulatory scheme world-wide.	vice and, to the lable impurity	concentration	of the	0.57	Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.2
chemical substance is absent from the list above, the chemica chnology incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulator iding compounds used by Microchip meet the UL94 V0 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plase protective "tubes" in which the specific product is shipped are	al substance is NOT this document, the ry concern for any re bility standard for pl stics/	an intentional ingredient in the semiconductor develor is no credible reason to believe that the unavoice gulatory scheme world-wide.  astics. You can access the UL iQTM family of data	vice and, to the lable impurity	concentration	of the	0.57		Total	100.00	0.2
mpliance with the above EU Directives has been verified via int a chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulation of the compounds used by Microchip meet the UL94 V0 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plase protective "tubes" in which the specific product is shipped at a x and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to that the standard product is suppliers. Supplier information is often protected frod raw material suppliers. Information is provided only as estimal mponents. These estimates do not include trace levels of dopant in the characteristics.	al substance is NOT this document, their processor for any rebility standard for platics/ re made from polyvii is form concerning the best of its knowle form because it has midisclosure as tractes of the average v	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoice gulatory scheme world-wide.  astics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technologie and belief, as of the date listed in this form. Mobeen compiled based on the ranges provided in Microchip Technologie and some information may not have bee legight of these parts and the average weight of an	vice and, to the lable impurity in bases to obtained to hold the hology Incorposic rochip Technaterial Safety is provided by ticipated signitic control of the provided by ticipated signitic pated signitic signi	concentration in a test repor packing slip or rated's semic rology Incorp Data Sheets p subcontract :	of the t at on the outer onductor orated rovided by assemblers etals	0.57	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.2
ic hemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of emical substance, if any, is not below the threshold of regulator olding compounds used by Microchip meet the UL94 V0 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plase protective "tubes" in which the specific product is shipped at a x and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to that onto guarantee the completeness and accuracy of data in this for material suppliers. Supplier information is often protected frod raw material suppliers. Information is provided only as estimated the completeness and accuracy of data in this formation is often protected from the completeness and accuracy of data in this formation is often protected from the completeness and accuracy of data in this formation is often protected from the completeness and accuracy of data in this formation is often protected from the completeness and accuracy of data in this formation is often protected from the completeness and accuracy of data in this formation is often protected from the completeness and accuracy of data in this formation is often protected from the completeness and accuracy of data in this formation is often protected from the completeness and accuracy of data in this formation is often protected from the completeness and contract the completeness and	al substance is NOT in this document, their ry concern for any rubility standard for platics/ re made from polyvir is form concerning: the best of its knowle form because it has midisclosure as tractices of the average whits, metals, and non ruy, express or implied and its subsidiari	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoice gulatory scheme world-wide.  astics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technologie and belief, as of the date listed in this form. Mobeen compiled based on the ranges provided in Microchip these parts and the average weight of anyl-metal materials contained within silicon devices (d, with respect to the information provided in this	vice and, to the lable impurity in bases to obtain the defendance of the label of t	concentration in a test repor packing slip of rated's semic hology Incorp Data Sheets p subcontract iciant toxic m ne finished pa ne exclusive, l	of the t at on the outer onductor orated rovided by assemblers stals rts. imited	3.58	(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.2
chemical substance is absent from the list above, the chemical chemical substance is absent from the list above, the chemical chinology Incorporated's knowledge and belief as of the date of smical substance, if any, is not below the threshold of regulator (ding compounds used by Microchip meet the UL94 V0 flamma be://ul.com/global/eng/pages/offerings/industries/chemicals/plas at and certain "reels" in which the specific product is shipped at and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information in the fixes in their original packing materials is true and correct to the strong transport of the	al substance is NOT in this document, their ty concern for any rubility standard for plotitics/ re made from polyvii is form concerning the best of its knowle form because it has midisclosure as tractes of the average vents, metals, and non ty, express or implied and its subsidiarioices.	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoice gulatory scheme world-wide.  astics. You can access the UL iQTM family of data and child in the control of the	vice and, to the lable impurity in bases to obtain and the mology Incorpoic rochip Technia taterial Safety in provided by ticipated significant in the conditions of ages, direct or ages, direct or abases where the label is the conditions of ages, direct or abases to obtain a conditions of ages, direct or ages, direct or abases to obtain a conditions of ages, direct or ages, direct or abases to obtain a conditions of ages, direct or abases to obtain a condition and the conditions of ages, direct or abases to obtain a condition and the condition an	concentration in a test repor packing slip of rated's semic rology Incorp Data Sheets p subcontract ficant toxic me e finished pa ne exclusive, I of sale. These indirect, cons	of the  t at  on the outer  onductor  orated  rovided by  assemblers  etals  rts.  imited  are provided  sequential or		(mg) Total  Doped Gold	Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin	100.00 % of Total Weight 100 100.00	
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PT 64 TQFP 10:37 AM : 5/6/2014

MICROCHIP  Semiconductor Devi	ce Type: PT 64 (Lead)	TQFP 14x14x1mm (V3 / VH)		nation Base /	•		•	ogeneous Materials: .g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total	1		202.22	() T1	M-110	A/ -4 T-4-134/-1-14	50.50
Basic Substance	CAS Number	Sub-Component	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	ļ
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	173.30	Copper	7440-50-8	97.42	33.24
Zinc	7440-22-4	Lead Frame	0.060	0.323	598			7440-50-8	0.25	
Chromium			0.060	0.323			Tin			
Chromium Silver (Ag)	7440-47-3 7440-22-4	Lead Frame Die Attach	1.129	6.096	831 11,288		Silver Zinc	7440-22-4 7440-66-6	1.91 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		
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	Plating 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 Total Mass						Total	100.00	
s semiconductor device and its homogenous material ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive	e).	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (	RoHS Recast	Directive) an	d with EU	56.92	Total (mg)	Chip (Die)	% of Total Weight	10.54
	ad via internal decian central	a complian declarations and for analytical test data			ŀ		Dened Ciliana	7440.04.0	400	
•	•	s, supplier declarations, and /or analytical test data.	and to the he	est of Microch	in		Doped Silicon	7440-21-3	100	
a chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of th bstance, if any, is not below the threshold of regulator biding compounds used by Microchip meet the UL94 V	chemical substance is NOT a e date of this document, ther y concern for any regulatory of flammability standard for pla	an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable scheme world-wide.	e impurity cor	ncentration of	the chemical	1.84	Doped Silicon  (mg) Total			0.34
a chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the bstance, if any, is not below the threshold of regulator olding compounds used by Microchip meet the UL94 VI p://ul.com/global/eng/pages/offerings/industries/chem e protective "tubes" in which the specific product is sl	chemical substance is NOT : e date of this document, ther y concern for any regulatory of lammability standard for placals/plastics/	an intentional ingredient in the semiconductor device e is no credible reason to believe that the unavoidable scheme world-wide. astics. You can access the UL iQTM family of databas	e impurity cor	ncentration of	the chemical	1.84		Total	100.00	0.34
a chemical substance is absent from the list above, the  chnology Incorporated's knowledge and belief as of the  destance, if any, is not below the threshold of regulator  olding compounds used by Microchip meet the UL94 Vi  tp://ul.com/global/eng/pages/offerings/industries/chem  ne protective "tubes" in which the specific product is sland certain "reels" may be made from PVC plastic.  icrochip Technology Incorporated believes the informate  evices in their original packing materials is true and cor- uarantee the completeness and accuracy of data in this  pipliers. Supplier information is often protected from di  pipliers. Information is provided only as estimates of the  stimates do not include trace levels of dopants, metals,	chemical substance is NOT as e date of this document, there concern for any regulatory of lammability standard for places/plastics/nipped are made from polyving the concerning street to the best of its knowled form because it has been coclosure as trade secrets and e average weight of these pa	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide.  astics. You can access the UL iQTM family of database and control of the	e impurity cor es to obtain a o hold the pa gy Incorporat chip Technol ty Data Sheet bucontract as oxic metals co	ncentration of test report a cking slip on ed's semicon ogy Incorpora is provided by semblers and	the chemical t the outer box ductor ted cannot r raw material raw material	1.84	(mg) Total	Total Wire Bond	% of Total Weight	0.34
a chemical substance is absent from the list above, the schnology Incorporated's knowledge and belief as of the obstance, if any, is not below the threshold of regulator olding compounds used by Microchip meet the UL94 Vitp://ul.com/global/eng/pages/offerings/industries/chem ne protective "tubes" in which the specific product is slid certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informativices in their original packing materials is true and cor uarantee the completeness and accuracy of data in this uppliers. Supplier information is often protected from diuppliers. Information is provided only as estimates of the	chemical substance is NOT : e date of this document, ther y concern for any regulatory D flammability standard for pl cals/plastics/ nipped are made from polyvir tion in this form concerning s rect to the best of its knowled form because it has been co sclosure as trade secrets and e average weight of these pa and non-metal materials conf y warranty, express or implied ed and its subsidiaries are co	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide.  astics. You can access the UL iQTM family of database and the intention of the int	e impurity cor ses to obtain a o hold the pa- gy Incorporat chip Technolo ty Data Sheet abcontract as oxic metals co t parts.	ncentration of a test report a cking slip on ed's semicon ogy Incorpora is provided by semblers and omponents. T exclusive, limi	the chemical t the outer box ductor ted cannot r raw material raw material hese	1.84	(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.34
chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the ostance, if any, is not below the threshold of regulator, it ding compounds used by Microchip meet the UL94 Vept/lul.com/global/eng/pages/offerings/industries/chem is protective "tubes" in which the specific product is slid certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informativities in their original packing materials is true and corrarantee the completeness and accuracy of data in this opliers. Supplier information is often protected from dippliers. Information is provided only as estimates of thimates do not include trace levels of dopants, metals, crochip Technology Incorporated does not provide any tranties provided by Microchip Technology Incorporated proporates.	chemical substance is NOT as e date of this document, there is concern for any regulatory. If all a concern for any regulatory of lammability standard for placals/plastics/ properties of the standard for placals/plastics/ properties of the standard for placals/plastics/ properties of the standard for placals form because it has been conscious as trade secrets and enverage weight of these pand non-metal materials continuously warranty, express or implied ed and its subsidiaries are conditionally in the standard for the standard	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide.  astics. You can access the UL iQTM family of databast and control of the	e impurity cor es to obtain a o hold the par gy Incorporat chip Technolo ty Data Sheet ubcontract as oot parts. laration. The s of sale. The	test report at cking slip on ed's semicon ogy Incorpora is provided by semblers and omponents. T exclusive, lim se are provide	the chemical t the outer box ductor ted cannot raw material raw material hese ited product id in		(mg) Total  Doped Gold	Total  Wire Bond  7440-57-5  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100.00 % of Total Weight 100 100.00	
chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the ostance, if any, is not below the threshold of regulatory iding compounds used by Microchip meet the UL94 Vio.//ul.com/global/eng/pages/offerings/industries/chem as protective "tubes" in which the specific product is slid certain "reels" may be made from PVC plastic.  Prochip Technology Incorporated believes the informatives in their original packing materials is true and corramtee the completeness and accuracy of data in this oppliers. Supplier information is often protected from displiers. Information is provided only as estimates of the imates do not include trace levels of dopants, metals, erochip Technology Incorporated does not provide any remaining provided by Microchip Technology Incorporate crochip's quotations, sales order acknowledgement, as crochip disclaims any duty to notify users of updates of erwise, suffered by users or third parties as a result of	chemical substance is NOT as e date of this document, there is concern for any regulatory. If all a concern for any regulatory of lammability standard for placals/plastics/ properties of the standard for placals/plastics/ properties of the standard for placals/plastics/ properties of the standard for placals form because it has been conscious as trade secrets and enverage weight of these pand non-metal materials continuously warranty, express or implied ed and its subsidiaries are conditionally in the standard for the standard	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable scheme world-wide.  astics. You can access the UL iQTM family of databast and control of the	e impurity cor es to obtain a o hold the par gy Incorporat chip Technolo ty Data Sheet ubcontract as oot parts. laration. The s of sale. The	test report at cking slip on ed's semicon ogy Incorpora is provided by semblers and omponents. T exclusive, lim se are provide	the chemical t the outer box ductor ted cannot raw material raw material hese ited product id in		(mg) Total  Doped Gold  (mg) Total	Wire Bond 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	

PT 64 TQFP 10:37 AM : 5/6/2014

mpliance 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 intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional ingredient in the semiconductor device and, to the best of Microchip intentional intentional ingredient in the semiconductor device and, to the best of Microchip intentional intentional ingredient in the semiconductor device and, to the best of Microchip intentional intentional ingredient in the semiconductor device and, to the best of Microchip inten	MICROCHIP				nation Base /	•		•	ogeneous Materials: .g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Basic Substance	Semiconductor Device Typ	e: PT 80 (Lead)	TQFP 12x12x1mm (X2/XD)								e3
Size Compounds used by Microchip model of the specific product is submissed from the specific products of the specific pr			"Contained In"	% Total							
Silica, vineous (6007-68-07) Model Compound (6) 234 (25-232) (800.542) Periodic Reser (No B) Compound (7) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	mag	292.63	(mg) Total	Mold Compound	% ot Total Weight	79.8
Eproy Resen (No bornims, No destination, No de	Silica, vitreous	60676-86-0	Mold Compound	69.354				Silica, vitreous	60676-86-0	86.91	
Princip Reser (Po Br / CS 2503 - No dummtrory velocide)   Trafe Secret   Trafe											
Copper										5.11	
Size of the complete legislation of the complete legislati		1333-86-4	Mold Compound	0.247	0.907	2,474		Carbon Black	1333-86-4	0.31	
Silver 17440-224 Lead Frame 0.175 0.643 1.752 Nickel 1740-25-8 95.24 Silver 1740-25-9 1.052 Nickel 1740-25-9 1.052	Copper	7440-50-8	Lead Frame	10.000	36.671	100,003	l.		Total	100.00	1
Silicon 1740-21-3 Lead Frame 0.047 0.1173 473 No.039 105 No.046 N		7440-02-0	Lead Frame	0.267	0.978	2,667	38.50	(mg) Total	Lead Frame	% of Total Weight	10.5
Silicon 1740-21-3 Lead Frame 0.047 0.1173 473 No.039 105 No.046 N											
Magnesium 7439-95-4 Lead Frame 0.011 0.039 105 Silver (Ap) 7440-27-4 Die Attrich 0.050 2.20 6.000 Acytiet Uterhane Oligomer General Die Attrich 0.150 0.550 1.500 Silver (Ap) 7440-27-5 Week Bord 0.020 6.703 1.200 2.75 Tri 17440-31-5 Page or several head jurge; Ment Tor Jewander der Volume Tor Jewander (Ap) 1.500 4.586 1.000 0.3667 g Total Mass Tor Jewander (Ap) 1.000 0.3667 g Total Mass Semicon 7440-27-1 0.000											
Acrystate Urethanne Oligomer General General General Gold Tria Gold Tria Gold Gold Tria Gold Tria Gold Gold Gold Gold Gold Gold Gold Gold											
Acytair Universitating Glogoria   General   Die Attach   0.150   0.550   1.500    Silicon   7440;71-3   Chip (Die)   7.500   7											
Silicon 7440-21-3 Chip (Die) 7.500 27.503 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 75.000 27.50 27.50 75.000 27.50 27.50 75.000 27.50 27											
Gold 7440-57-5   Wire Bond 1.000 0.366 T   Total Weight 1.000 0.366 T   Total Weight 1.000 0.366 T   Total Weight 2.000 0.366 T   To						,		Magnesium			
Tin 740-31-5 Paurg or entered seed (ping) - Mater Tin / aeroseled at 190°C (or 1 told 1 1,250											
s 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  27.50  Total (mg)  Chip (Die)  % of Total Weight  7.5  Total  Doped Silicon  7.40-21-3  100.00  Total  Doped Silicon  7.40-21-3  Doped S			Wire Bond			,	2.75	(mg) Total		% of Total Weight	0.75
Semiconductor device and its homogenous materials comply with EU Directive 2002/93/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU pictory 2012/65/EC (End-of-Life Vehicles (ELV) Directive).  mpliance 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 no credible reason to believe that the unavoidable impurity concentration of the chemical status and the status of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical status.  diding compounds used by Microchip meet the UL-94 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 certain "reels" may be made from PVC plastic.  Total "100.00"  Total Wire Bond "7440-57-5" 100  Doped Gold 7440-57-5" 100  Doped	Tin	7440-31-5									
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (Pind-of-Life Vehicles (ELV) Directive).  Total (mg)  Chip (Die)  Total (mg)  Total (mg)			TOTALS:	100.000	366.700	1,000,000	Ad	crylate Urethane Oligomer			
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 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 creating lipers. Supplier information is often protected from disclosure as trade secrets and some information in myster to the semiconductor from the list adore, 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 his more provided in the semiconductor of the chemical sphase of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical sphase of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical diling compounds used by Microchip meet the U.L.94 V0 flammability standard for plastics. You can access the U.L. IQTM family of databases to obtain a test report at 20.73 (mg) Total Wire Bond % of Total Weight 0.2 (mg) Total Wire Bond % of Total Weight 0.2 (mg) Total Vire Bond 7.440-57-5 100 (mg) Total Vire Bond 7.440-57-5 (mg) Total Vire Bond 7		0.3667	g Total Mass						Total	100.00	-
Inchedical substance is absent from lest above, the chemical substance is NOT an intentional network and incrocating heading comportated'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 stance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.				(	2 oo o, a	a with EU	27.50	Tatal (mm)	Chim (Dia)	0/ of Total Mainle	7.5
o://ul.com/global/eng/pages/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 of certain "reels" may be made from PVC plastic.    Doped Gold   7440-57-5   100	, , , ,	ernal design control	ls, supplier declarations, and /or analytical test data.	(110110 1100001	2	d With EU	27.50	, ,,	7440-21-3	100	
Total 100.00  To	r. In chemical substance is absent from the list above, the chemical Chnology Incorporated's knowledge and belief as of the date of	al substance is NOT fifther this document, ther	an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidabl	and, to the be	est of Microch	iip	27.50	, ,,	7440-21-3	100	
rochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor rices 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 rarnete the 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 spliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material spliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These imates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  **Trachip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product transfer provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in cochip's quotations, sales order acknowledgement, and invoices.  **Trachip's quotations, sales order acknowledgement, and invoices.**	impliance with the above EU Directives has been verified via into a chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of bstance, if any, is not below the threshold of regulatory concerbiding compounds used by Microchip meet the UL94 V0 flamma	al substance is NOT f this document, ther n for any regulatory bility standard for pl	an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidabl scheme world-wide.	and, to the be	est of Microch	iip the chemical		Doped Silicon	7440-21-3 Total	100	
reachip feerminoting freeminoting freeminoti	impliance with the above EU Directives has been verified via into a chemical substance is absent from the list above, the chemical chnology incorporated's knowledge and belief as of the date of bstance, if any, is not below the threshold of regulatory concerbiding compounds used by Microchip meet the UL94 V0 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plas	al substance is NOT f this document, ther n for any regulatory bility standard for pl stics/	an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidabl scheme world-wide.  lastics. You can access the UL iQTM family of database.	e and, to the be le impurity cor ses to obtain a	est of Microch acentration of a test report at	nip the chemical		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	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  Tin 7440-31-5 100.00  S) or of this Certificate of Compliance for semiconductor products.	impliance with the above EU Directives has been verified via into chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of bstance, if any, is not below the threshold of regulatory concerbiding compounds used by Microchip meet the UL94 V0 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to the arantee the completeness and accuracy of data in this form be ppliers. Supplier information is often protected from disclosure ppliers. Information is provided only as estimates of the average	al substance is NOT if this document, ther in for any regulatory ibility standard for platics/ re made from polyvir is form concerning a ise best of its knowled cause it has been co as trade secrets an e weight of these pa	an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidabl scheme world-wide.  lastics. You can access the UL iQTM family of database and belief, as of the date listed in this form. Micrompiled based on the ranges provided in Material Safe d some information may not have been provided by surts and the average weight of anticipated significant to	e and, to the be le impurity cor ses to obtain a to hold the pac pagy Incorporate posity Data Sheet ubcontract as: loxic metals co	est of Microch icentration of a test report at cking slip on a ed's semiconogy Incorpora s provided by semblers and	the chemical t the outer box ductor ted cannot r raw material		Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	0.2
Total 100.00	impliance with the above EU Directives has been verified via into chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of bstance, if any, is not below the threshold of regulatory concerbiding compounds used by Microchip meet the UL94 V0 flammap://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to the arantee the completeness and accuracy of data in this form be ppliers. Supplier information is often protected from disclosure ppliers. Information is provided only as estimates of the average timates do not include trace levels of dopants, metals, and non crochip Technology Incorporated does not provide any warrant irranties provided by Microchip Technology Incorporated and in	al substance is NOT if this document, ther in for any regulatory bility standard for pl stics/ re made from polyvir is form concerning s he best of its knowle cause it has been co as trade secrets an we weight of these pa metal materials con ty, express or implie is subsidiaries are co	an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidable scheme world-wide.  lastics. You can access the UL iQTM family of database and control of the control of	e and, to the be le impurity cor- ses to obtain a to hold the par- pay Incorporate chip Technolo ety Data Sheet ubcontract as: loxic metals co d parts.	est of Microch icentration of test report at cking slip on the ed's semicon- ogy Incorpora s provided by semblers and omponents. T	the chemical t the outer box ductor ted cannot raw material raw material hese	0.73	Doped 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	100 100.00 % of Total Weight 100 100.00	0.2
	mpliance with the above EU Directives has been verified via into chemical substance is absent from the list above, the chemical chnology Incorporated's knowledge and belief as of the date of obstance, if any, is not below the threshold of regulatory concerdiding compounds used by Microchip meet the UL94 V0 flamma p://ul.com/global/eng/pages/offerings/industries/chemicals/plate protective "tubes" in which the specific product is shipped at did certain "reels" may be made from PVC plastic.  Crochip Technology Incorporated believes the information in the vices in their original packing materials is true and correct to the arantee the completeness and accuracy of data in this form be popliers. Supplier information is often protected from disclosure oppliers. Information is provided only as estimates of the averagimates do not include trace levels of dopants, metals, and non crochip Technology Incorporated does not provide any warrant rranties provided by Microchip Technology Incorporated and it crochip's quotations, sales order acknowledgement, and invoic crochip disclaims any duty to notify users of updates or change terwise, suffered by users or third parties as a result of the use	al substance is NOT if this document, ther in for any regulatory billity standard for platics/ re made from polyvir is form concerning see best of its knowlecause it has been coast rade secrets ane weight of these parental materials contry, express or implies subsidiaries are crees.	an intentional ingredient in the semiconductor device re is no credible reason to believe that the unavoidabl scheme world-wide.  lastics. You can access the UL iQTM family of database and close the control of the co	and, to the be le impurity cor ses to obtain a to hold the par	est of Microch icentration of test report at cking slip on a ed's semicono ogy Incorpora os provided by semblers and omponents. T	tthe chemical tthe outer box ductor ted cannot raw material raw material hese ited product ed in	0.73	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-hour	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.2

PT 80 TQFP 10:37 AM : 5/6/2014

AICROCHIP Semiconductor Devi	ce Type: PF 80 (Lead) TQFP	14x14mm (X3/XE)		nation Base A pper Alloy (C				ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	(20.1) (20.1) (20.1)	"Contained In"	% Total		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		
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 0.058	3.269	6,146		Copper	7440-50-8	97.42	
Zinc Chromium	7440-66-6 7440-47-3	Lead Frame Lead Frame	0.058	0.309 0.429	581 807		Tin Silver	7440-31-5 7440-22-4	0.25 1.91	
Silver (Aa)	7440-47-3	Die Attach	0.830	4.416	8.300		Zinc	7440-22-4	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.090	0.479	900		Chromium	7440-47-3	0.16	
EPOXY RESIN	Trade Secret	Die Attach	0.080	0.426	800		Cindinan	Total		
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	0.02	Silver (Ag)	7440-22-4	83	
Tin		external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.200	6.384	12,000		ANHYDRIDE	Trade Secret	9	
***		TOTALS:		532.000	1.000.000		EPOXY RESIN	Trade Secret	8	
	0.5320 g Tota	al Macc						Total	100.00	
semiconductor device and its homogenous material ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	e).	C (RoHS Directive), EU Directive 2011/65/EU (Rol	HS Recast Direc	tive) and with	EU	40.70	Total (mg)	Chip (Die)	% of Total Weight	7.65
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifi	e). ed via internal design controls, suppli	C (RoHS Directive), EU Directive 2011/65/EU (Rolier declarations, and /or analytical test data.		•		40.70	Total (mg)  Doped Silicon	7440-21-3	100	7.65
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	e).  ed via internal design controls, suppli chemical substance is NOT an intent s document, there is no credible reasc	C (RoHS Directive), EU Directive 2011/65/EU (Rol ier declarations, and /or analytical test data. ional ingredient in the semiconductor device and	I, to the best of	, Microchip Ted	chnology	40.70	,	. , ,		7.65
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifichemical substance is absent from the list above, the rporated's knowledge and belief as of the date of this	e).  ed via internal design controls, suppli chemical substance is NOT an intent s document, there is no credible reasc any regulatory scheme world-wide. Oflammability standard for plastics. Y	C (RoHS Directive), EU Directive 2011/65/EU (Rol ier declarations, and /or analytical test data. ional ingredient in the semiconductor device and on to believe that the unavoidable impurity conce	I, to the best of entration of the	Microchip Tec chemical subs	chnology	1.97	,	7440-21-3	100	7.65 0.37
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifice 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 thing compounds used by Microchip meet the UL94 V	e).  ed via internal design controls, supplication of the microl substance is NOT an intent of document, there is no credible reason any regulatory scheme world-wide.  Of Itammability standard for plastics. Yicals/plastics/	C (RoHS Directive), EU Directive 2011/65/EU (Roling of the declarations, and /or analytical test data.  It is a semiconductor device and on to believe that the unavoidable impurity concentry of the concentry of	i, to the best of entration of the to 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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verifichemical 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 thing 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	e).  ed via internal design controls, supplichemical substance is NOT an intent sidocument, there is no credible reasc any regulatory scheme world-wide.  Of lammability standard for plastics. Yocals/plastics/ nipped are made from polyvinyl chloricals of the second it has been compiled based on the racerets and some information may not parts and the average weight of anti-	C (RoHS Directive), EU Directive 2011/65/EU (Roli ier declarations, and /or analytical test data.  ional ingredient in the semiconductor device and on to believe that the unavoidable impurity conce  of ou can access the UL iQTM family of databases  ide (PVC) plastic. "Window envelopes" used to h  ces restricted by RoHS in Microchip Technology I f the date listed in this form. Microchip Technologies provided in Material Safety Data Sheets pro have been provided by subcontract assemblers  icipated significant toxic metals components. Th	i, to the best of entration of the to obtain a test old the packing incorporated's: gy Incorporated yraw mand raw materi	Microchip Techemical substreport at slip on the outside semiconducto I cannot guara aterial suppliers. Ir	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 pliance with the above EU Directives has been verificated in the properties of the date of this is not below the threshold of regulatory concern for thing compounds used by Microchip meet the UL94 Vulul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is slain "reels" may be made from PVC plastic.  Ochip Technology Incorporated believes the informatoriginal 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 sided only as estimates of the average weight of thes	ed via internal design controls, suppliched via internal design controls, supplichemical substance is NOT an intent of document, there is no credible reason regulatory scheme world-wide.  Of lammability standard for plastics. You cals/plastics/ Inipped are made from polyvinyl chlorical plastics of its knowledge and belief, as of it has been compiled based on the racerets and some information may not be parts and the average weight of antitithin silicon devices (silicon IC) in the your warranty, express or implied, with references.	C (RoHS Directive), EU Directive 2011/65/EU (Roli ier declarations, and /or analytical test data.  ional ingredient in the semiconductor device and on to believe that the unavoidable impurity conce  ou can access the UL iQTM family of databases  ide (PVC) plastic. "Window envelopes" used to h  ces restricted by RoHS in Microchip Technology I f the date listed in this form. Microchip Technologies provided in Material Safety Data Sheets pro have been provided by subcontract assemblers icipated significant toxic metals components. The finished parts.	d, to the best of intration of the to obtain a test old the packing incorporated's gy incorporated by raw materiese estimates dutton. The exclusion of the estimates dutton. The exclusion of the estimates dutton. The exclusion of the estimates dutton.	Microchip Tec chemical subs report at slip on the ou semiconducto I cannot guara aterial suppliers. In o not include	chnology stance, if uter box and r devices in antee the ers. Supplier information is trace levels		Doped Silicon  (mg) Total  Doped Gold	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive pliance with the above EU Directives has been verification with the above EU Directives has been verification with the above EU Directives has been verification and the provided shown of the date of this is not below the threshold of regulatory concern for thing compounds used by Microchip meet the UL94 V/l/ul.com/global/eng/pages/offerings/industries/chem protective "tubes" in which the specific product is slain "reels" may be made from PVC plastic.  Ochip Technology Incorporated believes the information 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 sided only as estimates of the average weight of the popants, metals, and non-metal materials contained workip Technology Incorporated does not provide any anties provided by Microchip Technology Incorporated to the provided any anties provided by Microchip Technology Incorporated to the provided any anties provided by Microchip Technology Incorporated to the provided by Microchip Technology Incorporated to the provided by Microchip Technology Incorporated to the provided any anties provided by Microchip Technology Incorporated to the provided any anties provided by Microchip Technology Incorporated to the provided any anties provided by Microchip Technology Incorporated to the provided any anties provided by Microchip Technology Incorporated to the provided any anties provided by Microchip Technology Incorporated to the provided any anties provided by Microchip Technology Incorporated to the provided any anties provided by Microchip Technology Incorporated to the provided any anties provided by Microchip Technology Incorporated to the provided and the provided and the provided and the provided any anties provided by Microchip Technology Incorporated to the provided and the provided an	ed via internal design controls, suppliched via internal design controls, suppliched via internal design controls, suppliched via internal decument, there is no credible reason regulatory scheme world-wide.  O flammability standard for plastics. You cals/plastics/ hipped are made from polyvinyl chlorical via internal via	C (RoHS Directive), EU Directive 2011/65/EU (Rol ier declarations, and /or analytical test data.  ional ingredient in the semiconductor device and on to believe that the unavoidable impurity conce  'ou can access the UL iQTM family of databases  ide (PVC) plastic. "Window envelopes" used to h  ces restricted by RoHS in Microchip Technology I f the date listed in this form. Microchip Technologies provided in Material Safety Data Sheets pro have been provided by subcontract assemblers icipated significant toxic metals components. The finished parts.  espect to the information provided in this declara in Microchip's standard terms and conditions of ations and shall not be liable for any damages, d	d, to the best of intration of the to obtain a test old the packing incorporated's gy incorporated by raw maderiese estimates dution. The exclusiale. These are irect or indirect	Microchip Techemical substreport at slip on the outside a supplie at supplie at supplie on the outside sive, limited provided in Managements, consequentia,	chnology stance, if uter box and r devices in antee the ers. Supplier formation is trace levels roduct licrochip's	1.97	Doped 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	0.37

PF 80 TQFP 10:38 AM : 5/6/2014

licrochip				nation Base A pper Alloy (C				nogeneous Materials: e.g. pc boards, display		JEDEC 97 Produ Marking and/or Pkg. Labeling e3
Semiconductor Device Type	: PF 100 (Lead) T	QFP 12x12x1mm (V7)								
	<del>-                                    </del>	"Contained In"	% Total	Ī		1				
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	312.02	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	271.175	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	23.932	61.207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin (No Br / CL SbO3. No diantimony trioxide)	Trade Secret	Mold Compound	4.078	15.944	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.967	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10,000	39.101	100.003		Odibon Black	Total		
Nickel	7440-02-0	Lead Frame	0.267	1.043	2,667	41.06	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.175	0.685	1.752	41.00	Copper	7440-50-8	95.24	10.5
Silicon	7440-22-4	Lead Frame	0.173	0.005	473		Nickel	7440-02-0	2.54	
Magnesium	7440-21-3	Lead Frame	0.047	0.165	105	l l	Silver	7440-02-0	2.54 1.67	
Silver (Aq)	7440-22-4	Die Attach	0.600	2.346	6.000		Silicon	7440-21-3	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.587	1,500		Magnesium	7439-95-4	0.43	
Silicon	7440-21-3	Chip (Die)	7.500	29.325	75.000		Magnesium	7439-95-4 Total		
Gold	7440-57-5	Wire Bond	0.200	0.782	2,000	2.93	(mg) Total	Die Attach	% of Total Weight	0.75
Tin	7440-31-5 Plati	ng on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.888	12,500		Silver (Ag)	7440-22-4	80	
		TOTALS:	100.000	391.000	1,000,000	A	crylate Urethane Oligomer		20	
	0.3910 g	Total Mass						Total	100.00	
pliance with the above EU Directives has been verified via inter	nal design controls, sur	pplier declarations, and /or analytical test data.					Doped Silicon			
							Doped Silicon	7440-21-3	100	
themical substance is absent from the list above, the chemical supported is knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regula	t, there is no credible re						Doped Silicon	7440-21-3 Total		
rporated's knowledge and belief as of the date of this document	t, there is no credible re- tory scheme world-wide lity standard for plastics	ason to believe that the unavoidable impurity cond	centration of th	e chemical su		0.78	(mg) Total			0.2
rporated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regula ling compounds used by Microchip meet the UL94 V0 flammabil	t, there is no credible re- tory scheme world-wide lity standard for plastics cs/	ason to believe that the unavoidable impurity cond.  b. You can access the UL iQTM family of databases.	centration of th	e chemical su st report at	bstance, if	0.78	·	Total Wire Bond 7440-57-5	% of Total Weight	0.2
rporated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammabil //ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are	t, there is no credible re- tory scheme world-wide lity standard for plastics cs/ made from polyvinyl chi form concerning substa- ts knowledge and belief been compiled based on crets and some informat hese parts and the aver-	ason to believe that the unavoidable impurity cond.  b. You can access the UL iQTM family of databases  loride (PVC) plastic. "Window envelopes" used to  unces restricted by RoHS in Microchip Technology  as of the date listed in this form. Microchip Tech  the ranges provided in Material Safety Data Shee  ion may not have been provided by subcontract a  age weight of anticipated significant toxic metals of	entration of the stood of the stood of the packing incorporated to the provided by seemblers and	e chemical su st report at ng slip on the s semiconduc rated cannot raw material s raw materials	bstance, if outer box tor devices guarantee suppliers. suppliers.	0.78	(mg) Total	Total Wire Bond	% of Total Weight	0.2
rporated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammabil (//ul.com/global/eng/pages/offerings/industries/chemicals/plastic/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 this eir original packing materials is true and correct to the best of isompleteness and accuracy of data in this form because it has I olier information is often protected from disclosure as trade secmation is provided only as estimates of the average weight of t	t, there is no credible re- tory scheme world-wide lity standard for plastics cs/ made from polyvinyl chi form concerning substa- ts knowledge and belief been compiled based on crets and some informat hese parts and the aver- ntained within silicon de express or implied, with	ason to believe that the unavoidable impurity cond.  . You can access the UL iQTM family of databases loride (PVC) plastic. "Window envelopes" used to unces restricted by RoHS in Microchip Technology, as of the date listed in this form. Microchip Technithe ranges provided in Material Safety Data Shee ion may not have been provided by subcontract a age weight of anticipated significant toxic metals ovices (silicon IC) in the finished parts.	sentration of the stood of the packing incorporated someone provided by ssemblers and components. To ration. The excration. The excration. The excration.	e chemical su st report at ng slip on the s semiconduc rated cannot or raw material or raw material seese estimate	bstance, if outer box tor devices guarantee suppliers. suppliers. s do not	4.89	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight 100	1.25
rporated's knowledge and belief as of the date of this document is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammabil/ful.com/global/eng/pages/offerings/industries/chemicals/plastiprotective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information in this eir original packing materials is true and correct to the best of isompleteness and accuracy of data in this form because it has loller information is often protected from disclosure as trade see mation is provided only as estimates of the average weight of the detrace levels of dopants, metals, and non-metal materials conschip Technology Incorporated does not provide any warranty, anties provided by Microchip Technology Incorporated and its	t, there is no credible re- tory scheme world-wide lity standard for plastics cs/ made from polyvinyl chi form concerning substat ts knowledge and belief been compiled based on crets and some informat hese parts and the aver- ntained within silicon de express or implied, with subsidiaries are contain to Material Content Dec	ason to believe that the unavoidable impurity cond.  . You can access the UL iQTM family of database: doride (PVC) plastic. "Window envelopes" used to unces restricted by RoHS in Microchip Technology as of the date listed in this form. Microchip Technology the ranges provided in Material Safety Data Shee ion may not have been provided by subcontract a age weight of anticipated significant toxic metals of vices (silicon IC) in the finished parts.  In respect to the information provided in this declar and in Microchip's standard terms and conditions of larations and shall not be liable for any damages,	sentration of the stood of the packing incorporated to the provided by seemblers and components. The except sale. These addirect or indirect or indire	e chemical su st report at ng slip on the s semiconduc rated cannot (raw material s raw material shese estimate lusive, limited are provided ir	outer box tor devices guarantee suppliers. suppliers. s do not product n Microchip's		(mg) Total  Doped Gold	Wire Bond  7440-57-5  Total  Plating on external leads (pins) - Matte Tin / and the Ti	100.00 % of Total Weight 100	

PF 100 TQFP 10:38 AM : 5/6/2014

Basic Substance   CAS Number   Sub-Component   Weight   mg/part   ppm   330.85   (mg) Total   Mold Compound   % of Total Weight   68.34	MICROCHIP  Semiconductor Device	ce Type: PF 100 (Lead) TQF	P 14x14mm (E5 / EQ)		nation Base /	-		•	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Elite, venes (or fueed) 0007-66-07 Mode Compound 5-946 St.099 208.712 508.090 Per Person (From 1 Trade Secret 1 Mode Compound 4-10) 20.70 Person (From 1 Trade Secret 1 Noted Compound 4-10) 20.70 Person (From 1 Trade Secret 1 2.70 Person (From 1 Trade Secret 1 2			"Contained In"		malpart	nnm	339.65	(mg) Total	Mold Compound	% ot Total Weight	68.34
Egovy Rison Trade Secret Mode Compound 4 100 20 10 10 10 10 10 10 10 10 10 10 10 10 10								Cilian vitroous (or funed)	60676 96 0	9E 00	1
Primotic Resin											
Cashon Black											
Copper   7440-50-8   Lead Frame   0.067   0.354   671   133.44   (mg) Total   Lead Frame   0.067   0.068   0.259   1.059											
Tin   7440-31-5								Carbon Black			l
Silver ( ) 7440-224   Least Furno							422.44	(mm) Tatal			20.05
Exerc	IIII	7440-31-5	Leau Flaille	0.067	0.334	0/1	133.44	(mg) i otai	Lead Frame	% of Lotal Weight	26.85
Exerc	Silver	7440-22-4	Lead Frame	0.511	2 542	5 115		Copper	7440-50-8	97.42	
Sher (Ag) 7440-47-3 Lead Frame 0.087 0.331 671 2740-47-3 1 100 Attach 0.481 2.233 4.814 2 241 272 244 191 272 244 191 272 245 245 245 245 245 245 245 245 245 24											
Silver (Ag) 1744-0244 Die Attach 0.481 2.393 4,814 2.70 Chromosom 7440-973 0.25 EPOXYRESIN Trade Secret Die Attach 0.046 0.231 464											
ANY DRIVER Trade Secret   Die Atlach   0.052   0.259   522											
EPOXYRESIN Trade Secret Die Attach 0.046 0.231 454 Silicon 7440-57-5 Wire Bond 0.420 2.710 1.3499 27.100 2.88 (mg) Total 1.000.00 Total 1.000.000 1.000.000 1.000.000 1.000.000											
Silicon 7440-21-3 Chip (Dia) 2.710 13.489 27.100 2.88 (mg) 7total 5 (Melve) 7to 14 (Melve) 7to 15 (Melve) 7to 1								Gilloilliaili			Į.
Gold 7440-57-5 Wire Bond 10-420 2-87 4-200 5 Silver (Ag) 7440-57-5 Time year exement week gleady in the Try immunited at 1950-16 to 11-000 4-97-000 1,000,000 EPOXY RESIN 17mde Secret 8 1 100.00							0.00	(····) T-(-)			0.50
Tin 7440-31-5 Person exemended to trace for how and the formation in this form concerning substances in their original packing materials is true and certain "retels" may be made from PVC plastic.  Total Value of the some provided by ROHS in which the specific product is shipped are made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from PVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from PVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "retels" may be made from pVC plastic.  Total "100.00" Total Weight 1.1 linear to th							2.88				0.58
O.4970 g Total Mass  O.4970 g				****				- ' ( 3/			
Semiconductor device and its homogenous materials comply with EU Directive 2002/58/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU citive 2002/58/EC (End-of-Life Vehicles (ELV) Directive).  13.47 Total (mg) Chip (Die) % of Total Weight 2.71 politance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  13.47 Total (mg) Chip (Die) % of Total Weight 2.71 politance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  13.47 Total (mg) Chip (Die) % of Total Weight 2.71 politance with the above EU Directives has been verified via internal design controls, supplier declarations (NCD an intertional ingredient in the semiconductor device and, to the best of Microchip inclogy incroporated'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 inical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  2.09 (mg) Total Wire Bond % of Total Weight 0.42 portocetive "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 and certain "reels" may be made from PVC plastic. "Window envelopes" used to hold the packing slip on the outer and certain "reels" may be made from PVC plastic.  2.09 (mg) Total Wire Bond % of Total Weight 0.42 portocetive "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 and certain "reels" may be made from PVC plastic.  2.09 (mg) Total Wire Bond % of Total Weight 0.42 portocetive "tubes" in which the specific product is shipped and belief, as of the date leasted in this form because it has been complied based on the ranges provided in Microchip Technology Incorporated ca	lin	7440-31-5 Plating o									
semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHo-C-Life Vehicles (ELV) Directive).  Journal (Ind)  Total (Ing)  Chip (Die)  (No Fotal Weight 2.71  Total (Ing)  Chip (Die)  (Ing)  Chip (Ing)  Chip (Die)  Chip (Die)  Chip (Die)  Chip (Die)  Chip (Die)  Chip (Die)			TOTALS:	100.000	497.000	1,000,000		EPOXY RESIN			
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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 honology 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 mical substance, if any, 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 control of the microchip for 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 and certain "reels" may be made from PVC plastic.  Total 100.00    Doped Gold 7440-57-5			rec (Rono Directive), Eo Directive 201 1/03/1	EU (KUHS KECA	st Directive) a	iliu willi EU	13.47	Total (mg)	Chip (Die)	% of Total Weight	2 71
nemicla substance is absent from the retemical substance is NOT an intentional ingreement in the semiconductor device and, to the less of microcrip monology 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 mical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  2.09 (mg) Total Wire Bond % of Total Weight 0.42 (mg) Total wire Bond % of To	upliance with the above EU Directives has been verifie	d via internal design controls, supp	olier declarations, and /or analytical test dat	а.				Doped Silicon			
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and certain "reels" may be made from PVC plastic.  Oochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor cantee the 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 reiral suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and material suppliers. Information is provided only as estimates of not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Oochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited fluct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's s	chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of r	chemical substance is NOT an inte e date of this document, there is no regulatory concern for any regulator	ntional ingredient in the semiconductor dev credible reason to believe that the unavoid ory scheme world-wide.	rice and, to the able impurity c	oncentration	of the		Doped Silicon	7440-21-3	100	
cochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor ces 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 rantee the 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 erial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. see estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Tochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited fleads (pins) - Matte Tin / annealed at 150°C for 1 hour  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour  5.47 (mg) Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour  Tin 7440-31-5 100.00  Tin 7440-31-5 100.00	chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of r	chemical substance is NOT an inte e date of this document, there is no regulatory concern for any regulator flammability standard for plastics.	ntional ingredient in the semiconductor dev credible reason to believe that the unavoid ory scheme world-wide.	rice and, to the able impurity c	oncentration	of the	2.09	<u> </u>	7440-21-3 Total	100	
technicody incorporated dues not provide any warranty, express of miningle, with respect to the information provided in this declaration. The exclusive, limited user are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by University and the conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its Subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its Subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and its Subsidiaries are cont	a chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 V0 pp://ul.com/global/eng/pages/offerings/industries/chemical	chemical substance is NOT an inte e date of this document, there is no egulatory concern for any regulato flammability standard for plastics. cals/plastics/	ntional ingredient in the semiconductor dev credible reason to believe that the unavoid ory scheme world-wide.  You can access the UL iQTM family of data	rice and, to the able impurity c	oncentration	of the	2.09	(mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
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  Tin 7440-31-5 100.00  To 7440-31-5 100.00	a chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 V0 pp://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shown and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informativices in their original packing materials is true and corrarantee the completeness and accuracy of data in this taerial suppliers. Supplier information is often protected w material suppliers. Information is provided only as est	chemical substance is NOT an inte- e date of this document, there is no regulatory concern for any regulato- flammability standard for plastics. cals/plastics/ ipped are made from polyvinyl chlo- ion in this form concerning substan- ect to the best of its knowledge an form because it has been compiled from disclosure as trade secrets a timates of the average weight of the	ntional ingredient in the semiconductor device redible reason to believe that the unavoidory scheme world-wide.  You can access the UL iQTM family of data bride (PVC) plastic. "Window envelopes" usinces restricted by RoHS in Microchip Techn d belief, as of the date listed in this form. Mit based on the ranges provided in Material Is and some information may not have been prese parts and the average weight of anticipress.	ice and, to the able impurity c bases to obtain ed to hold the processor in the processor i	oncentration on a test report packing slip of ated's semicology Incorpo ets provided incontract asser toxic metals of	at  n the outer  anductor  rated cannot by raw  mblers and	2.09	(mg) Total	7440-21-3  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
Total 100.00	a chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 V0 pp://ul.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shown and certain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the informativices in their original packing materials is true and corrarantee the completeness and accuracy of data in this sterial suppliers. Supplier information is often protected w material suppliers. Information is provided only as estiese estimates do not include trace levels of dopants, m crochip Technology Incorporated does not provide any oduct warranties provided by Microchip Technology Incorporated does not provide any	chemical substance is NOT an inte- e date of this document, there is no regulatory concern for any regulato- flammability standard for plastics. cals/plastics/ ipped are made from polyvinyl chlo- ion in this form concerning substan- ect to the best of its knowledge an- form because it has been compiled from disclosure as trade secrets a timates of the average weight of the tetals, and non-metal materials con- warranty, express or implied, with corporated and its subsidiaries are	ntional ingredient in the semiconductor device redible reason to believe that the unavoid ory scheme world-wide.  You can access the UL iQTM family of data bride (PVC) plastic. "Window envelopes" us nees restricted by RoHS in Microchip Techn d belief, as of the date listed in this form. Mi I based on the ranges provided in Material S and some information may not have been prese parts and the average weight of anticipatained within silicon devices (silicon IC) in the respect to the information provided in this orespect to the information provided in this orespective to the	ice and, to the able impurity c bases to obtain ed to hold the pology Incorpor crochip Technosafety Data She ovided by subcated significant he finished parideclaration. The	oncentration on a test report packing slip of ated's semicology Incorpolets provided contract asser toxic metals of the contract assertion of the contract as a series of the contract as a seri	at  at  n the outer  anductor  rated cannot by raw  hblers and components.  mited		(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	100 100.00 % of Total Weight 100 100.00	0.42
	a chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of rolding compounds used by Microchip meet the UL94 V0 pp://ul.com/global/eng/pages/offerings/industries/chemic e protective "tubes" in which the specific product is ship in a certain "reels" may be made from PVC plastic. Crochip Technology Incorporated believes the informativices in their original packing materials is true and corramete the completeness and accuracy of data in this related to th	chemical substance is NOT an inte- e date of this document, there is no regulatory concern for any regulato- flammability standard for plastics. cals/plastics/ ipped are made from polyvinyl chlo- ion in this form concerning substan- ect to the best of its knowledge an form because it has been compiled. I from disclosure as trade secrets a timates of the average weight of the tetals, and non-metal materials con warranty, express or implied, with corporated and its subsidiaries are and invoices.  r changes to Material Content Deck the users' reliance on the informat	ntional ingredient in the semiconductor device redible reason to believe that the unavoid ory scheme world-wide.  You can access the UL iQTM family of data oride (PVC) plastic. "Window envelopes" us neces restricted by RoHS in Microchip Techn dibelief, as of the date listed in this form. Mit based on the ranges provided in Material sund some information may not have been prese parts and the average weight of anticipatained within silicon devices (silicon IC) in the respect to the information provided in this contained in Microchip's standard terms an arations and shall not be liable for any dama arations and shall not be liable for any dama.	bases to obtain  do to hold the p  cology Incorpor  crochip Techno  afety Data She  ovided by subc  ated significant  declaration. The  d conditions of	oncentration on a test report packing slip of ated's semicology Incorpo ets provided contract asser toxic metals of the contract asser toxic metals of the contract asser toxic metals of the contract assert toxic metals of the contract as a serior of the cont	at  In the outer  Inductor  Inductor  Interest and components.  Interest and are provided  equential 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 % of Total Weight 100.00	0.42

PF 100 TQFP 100 TQFP 100 TQFP

MICROCHIP Semiconductor De	vice Type: MS 100 QFP	14v20v2 7 TS		nation Base A	,		Package Hom	ogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor De	vice Type. Into 100 Q11	"Contained In"	% Total	1					1	63
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1175.15	(mg) Total	Mold Compound	% ot 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	36,102		Phenol Resin	Trade Secret	5.19	
Carbon Black	1333-86-4	Mold Compound	0.209	3.525	2,087		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	24.153	408.043	241.531		l <del>i</del>	Total	100.00	•
Nickel	7440-02-0	Lead Frame	0.644	10.882	6.441	428.43	(mg) Total	Lead Frame	% of Total Weight	25.36
Silver	7440-22-4	Lead Frame	0.423	7.151	4,233	120110	Copper	7440-50-8	95,241	20.00
Silicon	7440-21-3	Lead Frame	0.114	1.928	1.141		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.025	0.428	254		Silver	7440-02-0	1.669	
Silver	7440-22-4	Die Attach	0.038	0.634	375		Silicon	7440-21-3	0.45	
Epoxy Resin	Trade secret	Die Attach	0.005	0.084	50		Magnesium	7439-95-4	0.43	
Diluent	Trade secret	Die Attach	0.005	0.084	50		Wagnesiam	Total		
Hardener	Trade secret	Die Attach	0.003	0.042	25	0.84	() <b>T</b> - (-1			0.05
			3.390		33.900	0.04	(mg) Total	Die Attach	% of Total Weight	0.05
Silicon	7440-21-3	Chip (Die)		57.271			Silver	7440-22-4	75	
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		
	1.6894	g Total Mass				57.27	Total (mg)	Chip (Die)	% of Total Weight	3.39
							(9)	Op (5.0)	70 Or Total Weight	3.39
		002/95/EC (RoHS Directive), EU Directive 2011/65/E	U (RoHS Reca	st Directive) a	nd with EU		Doped Silicon	7440-21-3	100	3.39
ective 2002/53/EC (End-of-Life Vehicles (ELV) Direct	ive).	······································		st Directive) a	nd with EU		3,	1	100	3.39
ective 2002/53/EC (End-of-Life Vehicles (ELV) Direct mpliance with the above EU Directives has been veri chemical substance is absent from the list above, the chology Incorporated's knowledge and belief as of	ive). Ified via internal design control ne chemical substance is NOT a the date of this document, ther	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	ı. ce and, to the	best of Microc	chip	1.18	3,	7440-21-3	100	0.07
is semiconductor device and its homogenous materi ective 2002/53/EC (End-of-Life Vehicles (ELV) Direct mpliance with the above EU Directives has been veri chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of emical substance, if any, is not below the threshold of Iding compounds used by Microchip meet the UL94 p://ul.com/global/eng/pages/offerings/industries/che	ive).  fied via internal design control ne chemical substance is NOT . the date of this document, ther of regulatory concern for any re VO flammability standard for pl.	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.	i. ce and, to the able impurity c	best of Microconcentration o	chip of the	1.18	Doped Silicon	7440-21-3 Total Wire Bond palladium coated	100.00	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Direct mpliance with the above EU Directives has been veri chemical substance is absent from the list above, the chnology incorporated's knowledge and belief as of emical substance, if any, is not below the threshold diding compounds used by Microchip meet the UL94 p://ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is	ive).  fied via internal design control ne chemical substance is NOT a the date of this document, ther of regulatory concern for any re V0 flammability standard for pl micals/plastics/ shipped are made from polyvin	s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi e is no credible reason to believe that the unavoid egulatory scheme world-wide. astics. You can access the UL iQTM family of datab	i. ce and, to the able impurity c	best of Microconcentration o	chip of the	1.18	Doped Silicon  (mg) Total	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)	100 100.00 % of Total Weight	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Direct mpliance with the above EU Directives has been veri chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of emical substance, if any, is not below the threshold Iding compounds used by Microchip meet the UL94	ive).  fied via internal design control ne chemical substance is NOT a the date of this document, ther of regulatory concern for any re V0 flammability standard for pl micals/plastics/ shipped are made from polyvin	s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi e is no credible reason to believe that the unavoidate action of the control of	ce and, to the able impurity coases to obtain	best of Microconcentration on a test report	chip of the at n the outer	1.18	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) Direct mpliance with the above EU Directives has been veri chemical substance is absent from the list above, the chology incorporated's knowledge and belief as of emical substance, if any, is not below the threshold diding compounds used by Microchip meet the UL94 p://ul.com/global/eng/pages/offerings/industries/che e protective "tubes" in which the specific product is x and certain "reels" may be made from PVC plastic.	ive).  fied via internal design control to chemical substance is NOT in the date of this document, there of regulatory concern for any re VO flammability standard for pl. micals/plastics/ shipped are made from polyvin the concerning some concerning is the place of the best of its knowled is form because it has been coted from disclosure as trade seestimates of the average weigh	s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devie to credible reason to believe that the unavoidagulatory scheme world-wide. astics. You can access the UL iQTM family of databasely chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Micmpiled based on the ranges provided in Material Sicrets and some information may not have been prot of these parts and the average weight of anticipat	ce and, to the able impurity consess to obtain the dot ohold the pology incorpor crochip Technafety Data She ovided by subcet significant	best of Microconcentration on a test report packing slip or ated's semicoology Incorporets provided boontract assem toxic metals of	chip of the  at  n the outer  inductor rated cannot op yraw inblers and	1.18	Doped Silicon  (mg) Total  Copper	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)  7440-50-8  7440-05-3	100 100.00 % of Total Weight 98	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Direct mpliance with the above EU Directives has been veri chemical substance is absent from the list above, the chnology Incorporated's knowledge and belief as of emical substance, if any, is not below the threshold of liding compounds used by Microchip meet the UL94 p://ul.com/global/eng/pages/offerings/industries/che aprotective "tubes" in which the specific product is a rand certain "reels" may be made from PVC plastic. prochip Technology Incorporated believes the informations in their original packing materials is true and carantee the completeness and accuracy of data in the terial suppliers. Supplier information is often protect w material suppliers. Information is provided only as	ive).  fied via internal design control ne chemical substance is NOT a the date of this document, ther of regulatory concern for any re V0 flammability standard for pl micals/plastics/ shipped are made from polyvin mation in this form concerning s porrect to the best of its knowled is form because it has been co ted from disclosure as trade se estimates of the average weigh metals, and non-metal materia ny warranty, express or implied incorporated and its subsidiaria	s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devi e is no credible reason to believe that the unavoidate squlatory scheme world-wide. astics. You can access the UL iQTM family of datable of the control of	ce and, to the able impurity coases to obtain the dot ohold the pology Incorpor crochip Technafety Data Shevided by subted significant te finished par teclaration. The	best of Microconcentration of a test report packing slip or rated's semico ology Incorporets provided bontract assent toxic metals of ts.	chip of the  at  n the outer  inductor rated cannot by raw inblers and components.  mited	1.18	Doped Silicon  (mg) Total  Copper	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)  7440-50-8  7440-05-3	100 100.00 % of Total Weight 98	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Direct mpliance with the above EU Directives has been veril chemical substance is absent from the list above, the chology incorporated's knowledge and belief as of emical substance, if any, is not below the threshold of the compounds used by Microchip meet the UL94 p://ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is a not certain "reels" may be made from PVC plastic. Prochip Technology Incorporated believes the inform vices in their original packing materials is true and carantee the completeness and accuracy of data in their al suppliers. Supplier information is often protect w material suppliers. Information is provided only as esee estimates do not include trace levels of dopants, crochip Technology Incorporated does not provide adduct warranties provided by Microchip Technology	ive).  fied via internal design control the chemical substance is NOT at the date of this document, there is regulatory concern for any revolve fregulatory concern for any revolve flammability standard for planicals/plastics/ shipped are made from polyvination in this form concerning sorrect to the best of its knowled is form because it has been coved from disclosure as trade se estimates of the average weigh, metals, and non-metal materiany warranty, express or implied incorporated and its subsidiarient, and invoices.  To changes to Material Contern of the users' reliance on the in	s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devie is no credible reason to believe that the unavoide squlatory scheme world-wide. astics. You can access the UL iQTM family of database of the control of t	ce and, to the able impurity consess to obtain the dot hold the pology incorpor crochip Technafety Data She ovided by suided by suided by all the finished par lectaration. The donditions of ges, direct or	best of Microconcentration on a test report packing slip or ated's semicoology Incorporets provided broontract assen toxic metals of ts.  e exclusive, lirf sale. These a indirect, consecution of the contract assen	chip of the at n the outer inductor rated cannot by raw holers and components. inited ire provided equential or		Doped Silicon  (mg) Total  Copper  Palladium	7440-21-3  Total  Wire Bond palladium coated copper (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	0.07
citive 2002/53/EC (End-of-Life Vehicles (ELV) Direct inpliance with the above EU Directives has been verichemical substance is absent from the list above, the hology Incorporated's knowledge and belief as of mical substance, if any, is not below the threshold of ding compounds used by Microchip meet the UL94://ul.com/global/eng/pages/offerings/industries/che protective "tubes" in which the specific product is and certain "reels" may be made from PVC plastic. Tochip Technology Incorporated believes the informacies in their original packing materials is true and crantee the completeness and accuracy of data in theiral suppliers. Supplier information is often protect material suppliers. Supplier information is provided only as se estimates do not include trace levels of dopants, rochip Technology Incorporated does not provide a duct warranties provided by Microchip Technology licrochip Technology Incorporated cost not provide a duct warranties provided by Microchip Technology licrochip Technology Incorporated sex order acknowledgement cochip disclaims any duty to notify users of updates erwise, suffered by users or third parties as a result	ive).  fied via internal design control the chemical substance is NOT at the date of this document, there is regulatory concern for any revolve fregulatory concern for any revolve flammability standard for planicals/plastics/ shipped are made from polyvination in this form concerning sorrect to the best of its knowled is form because it has been coved from disclosure as trade se estimates of the average weigh, metals, and non-metal materiany warranty, express or implied incorporated and its subsidiarient, and invoices.  To changes to Material Contern of the users' reliance on the in	s, supplier declarations, and /or analytical test data an intentional ingredient in the semiconductor devie is no credible reason to believe that the unavoide squlatory scheme world-wide. astics. You can access the UL iQTM family of database of the control of t	ce and, to the able impurity consess to obtain the dot hold the pology incorpor crochip Technafety Data She ovided by suided by suided by all the finished par lectaration. The donditions of ges, direct or	best of Microconcentration on a test report packing slip or ated's semicoology Incorporets provided broontract assen toxic metals of ts.  e exclusive, lirf sale. These a indirect, consecution of the contract assen	chip of the at n the outer inductor rated cannot by raw holers and components. inited ire provided equential or		Doped Silicon  (mg) Total  Copper  Palladium  (mg) Total	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 2 100.00 % of Total Weight 100.00	0.07

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MICROCHIP				ination Base opper Alloy (	•			ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Produce Marking and/or Pkg. Labeling e3
Semiconductor Devi	ce Type: NU TQFP 12									
2		"Contained In" Sub-Component	% Total			372.52	(mg) Total	Mold Compound	% ot Total Weight	66.82
Basic Substance	CAS Number		Weight	mg/part	ppm					
Silica, vitreous (or fused)	60676-86-0	Mold Compound	56.797	316.643	567,970		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.813	32.409	58,133		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin Carbon Black	Trade Secret 1333-86-4	Mold Compound  Mold Compound	4.009 0.200	22.351 1.118	40,092 2.005		Phenolic Resin Carbon Black	Trade Secret 1333-86-4	6.00 0.30	
Copper	7440-50-8	Lead Frame	25.658	143.043	256,579		Carbon Black	Total		
Nickel	7440-02-0	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	20.94
Silicon	7440-21-3	Lead Frame	0.430	0.676	1,212		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.027	0.150	269		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.052	0.130	517		Silicon	7440-21-3	0.45	
Epoxy Resin	9003-36-5	Die Attach	0.013	0.073	132		Magnesium	7439-95-4	0.10	
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.004	0.025	44		Wagnesian	Total		
Phenolic hardener	92-88-6	Die Attach	0.000	0.001	2	0.39	(mg) Total	Die Attach	% of Total Weight	0.07
Butyl cellosolve acetate	112-07-2	Die Attach	0.001	0.003	6	0.00	Silver	7440-22-4	73.80	0.07
Silicon	7440-21-3	Chip (Die)	4.760	26.537	47.600		Epoxy Resin	9003-36-5	18.80	
Gold	7440-57-5	Wire Bond	0.250	1.394	2.500		t-Butyl phenyl glycidyl ether	3101-60-8	6.30	
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.160	6.467	11.600		Phenolic hardener	92-88-6	0.30	
	11.00.0	TOTALS:		557.500	1.000.000		Butyl cellosolve acetate	112-07-2	1	
	0.5575	Total Mass			.,,					
			(RoHS Recast	Directive) and	d with EU	26.54	(mg) Total	Total Chip (Die)	100.00 % of Total Weight	4.76
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified	omply with EU Directive 2002/via internal design controls, su	95/EC (RoHS Directive), EU Directive 2011/65/EU (				26.54	(mg) Total  Doped Silicon		% of Total Weight	4.76
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 charporated's knowledge and belief as of the date of this dis not below the threshold of regulatory concern for an ling compounds used by Microchip meet the UL94 V0 fl	omply with EU Directive 2002/ via internal design controls, su memical substance is NOT an ir ocument, there is no credible r y regulatory scheme world-wic ammability standard for plastic	95/EC (ROHS Directive), EU Directive 2011/65/EU ( applier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device eason to believe that the unavoidable impurity cole.	and, to the be	est of Microch f the chemical	ip Technology substance, if	26.54		Chip (Die) 7440-21-3	% of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Appliance with the above EU Directives has been verified chemical substance is absent from the list above, the cirporated's knowledge and belief as of the date of this dis not below the threshold of regulatory concern for an aling compounds used by Microchip meet the UL94 Vo fit.//ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	omply with EU Directive 2002/ via internal design controls, su memical substance is NOT an ir ocument, there is no credible r y regulatory scheme world-wic ammability standard for plastic is/plastics/	ps/EC (RoHS Directive), EU Directive 2011/65/EU ( applier declarations, and /or analytical test data. attentional ingredient in the semiconductor device eason to believe that the unavoidable impurity co le. as. You can access the UL iQTM family of database	and, to the be ncentration o	est of Microch f the chemical a test report at	ip Technology substance, 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).  Inpliance 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 dot, is not below the threshold of regulatory concern for an ding compounds used by Microchip meet the UL94 Vo flor/clul.com/global/eng/pages/offerings/industries/chemicate protective "tubes" in which the specific product is ship	omply with EU Directive 2002/ via internal design controls, su memical substance is NOT an ir ocument, there is no credible r y regulatory scheme world-wic ammability standard for plastic is/plastics/	ps/EC (RoHS Directive), EU Directive 2011/65/EU ( applier declarations, and /or analytical test data. attentional ingredient in the semiconductor device eason to believe that the unavoidable impurity co le. as. You can access the UL iQTM family of database	and, to the be ncentration o	est of Microch f the chemical a test report at	ip Technology substance, if		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight	
is semiconductor device and its homogenous materials of ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance 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 dy, is not below the threshold of regulatory concern for an idling compounds used by Microchip meet the UL94 V0 flp://ul.com/global/eng/pages/offerings/industries/chemica is protective "tubes" in which the specific product is ship did certain "reels" may be made from PVC plastic.  Prochip Technology Incorporated believes the information their original packing materials is true and correct to the completeness and accuracy of data in this form because polier information is often protected from disclosure as to prmation is provided only as estimates of the average we lude trace levels of dopants, metals, and non-metal mate	omply with EU Directive 2002/s via internal design controls, su nemical substance is NOT an ir ocument, there is no credible r y regulatory scheme world-wic ammability standard for plastic is/plastics/ ped are made from polyvinyl c in in this form concerning subs best of its knowledge and belie it has been compiled based c adde secrets and some informa ight of these parts and the ave	pplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device eason to believe that the unavoidable impurity cole.  Is. You can access the UL iQTM family of databashloride (PVC) plastic. "Window envelopes" used to tances restricted by RoHS in Microchip Technologi, as of the date listed in this form. Microchip Technologi the ranges provided in Material Safety Data Shettion may not have been provided by subcontract rage weight of anticipated significant toxic metals.	and, to the been contraction of the part o	est of Microch f the chemical a test report at cking slip on t ed's semicone rporated cann by raw materi and raw materi	ip Technology substance, if t the outer box ductor devices of guarantea all suppliers. lal suppliers.		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% 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 corporated's knowledge and belief as of the date of this dr., is not below the threshold of regulatory concern for an idding compounds used by Microchip meet the UL94 V0 flp://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship id certain "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the information heir original packing materials is true and correct to the completeness and accuracy of data in this form becaus polier information is often protected from disclosure as to prmation is provided only as estimates of the average we	omply with EU Directive 2002/ via internal design controls, su memical substance is NOT an ir comment, there is no credible r y regulatory scheme world-wice ammability standard for plastic is/plastics/ ped are made from polyvinyl c in in this form concerning subsite to fits knowledge and belie is thas been compiled based c rade secrets and some informs ight of these parts and the ave rials contained within silicon d arranty, express or implied, wi and its subsidiaries are contai	applier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device eason to believe that the unavoidable impurity cole.  Is. You can access the UL iQTM family of databashloride (PVC) plastic. "Window envelopes" used thances restricted by RoHS in Microchip Technolof, as of the date listed in this form. Microchip Technolom the ranges provided in Material Safety Data Shetting with the range provided in Material Safety active and weight of anticipated significant toxic metalicevices (silicon IC) in the finished parts.  The respect to the information provided in this decition in the selection in	and, to the be- sees to obtain a to hold the pa gy Incorporat- chnology Inco- eets provided assemblers a s components	est of Microch f the chemical a test report at cking slip on t ed's semicond rporated cann by raw mater and raw mater s. These estim exclusive, limi	ip Technology substance, if t the outer box ductor devices of guarantee ial suppliers. altes do not		Doped Silicon  (mg) Total  Gold	Chip (Die)  7440-21-3  Total  Wire Bond  7440-57-5	% of Total Weight  100  100.00  % of Total Weight  100.00  100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified  chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is substance in the list above, the chemical substance 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.  Tochip Technology Incorporated believes the information  ieir original packing materials is true and correct to the  completeness and accuracy of data in this form because  piler information is often protected from disclosure as termation 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 we  ranties provided by Microchip Technology Incorporated	omply with EU Directive 2002/ via internal design controls, su nemical substance is NOT an ir coument, there is no credible r y regulatory scheme world-wic ammability standard for plastic is/plastics/ ped are made from polyvinyl c in in this form concerning subsite it has been compiled based of aide secrets and some informatight of these parts and the averials contained within silicon d arranty, express or implied, wi and its subsidiaries are contai invoices.  Changes to Material Content De the users' reliance on the inform	applier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device eason to believe that the unavoidable impurity cole.  Its. You can access the UL iQTM family of database therefore the color of the date listed in this form. Microchip Technology, as of the date listed in this form. Microchip Technology of the color of	and, to the bincentration of ses to obtain a to hold the pa gy Incorporational particular assemblers as components laration. The sof sale. These, direct or incorporations, direct or incorporations.	est of Microch f the chemical a test report at cking slip on the ed's semiconor porated cann by raw mater and raw mater s. These estim exclusive, limi se are provide direct, conseq	ip Technology substance, if the outer box ductor devices of guarantea all suppliers. ial suppliers. ates do not ted product d in	1.39	Doped Silicon  (mg) Total  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	0.25

TQFP-128 14x14 10:39 AM: 5/6/2014

Basis Substance  CAS Number  Silve, Virenous of Tusted)  (505) 552-52  Molt Compound  Francis Resist  Francis	"Contained In"							s)	Marking and/or Pkg. Labeling e3
Bails Substance CAS Number Sub-Component Weight mygoart por Silice, viterous (or flued) 10,000 f-66-00 Moid Compound 5,000 30,750 579,050 F-78,050	Basic Substance     CAS Number     Sub-Component     Weight       Silica, vitreous (or fused)     60676-86-0     Mold Compound     57.991								
Sales, viticos (Probabl)  Siles, viticos (Pr	Silica, vitreous (or fused) 60676-86-0 Mold Compound 57.991	ht			467.70	(mg) Total	Mold Compound	9/ at Tatal Waight	68.23
Epoxy Resin   Trade Secret   Modd Compound   5.356   40.6981   59.360   Prevoice Resin   Trade Secret   8.7000   Prevoice Resin   Trade Secret   6.0000   Prevoice Resin   Prevoice		ıı. ı m	ng/part	ppm	407.72	(ilig) rotal	wola Compound	% of Total Weight	66.23
Phenotic Resen   Trade Secret   Mold Compound   4.094   28.063   40.938   Phenotic Resen   Trade Secret   6.0000   Carbon Black   1333-864   Mold Compound   0.205   1.463   2.047   Trade Secret   100.000   Carbon Black   1333-864   0.0000   Carbon Black   1333-		96 39	397.559	579,955		Silica, vitreous (or fused)	60676-86-0	85.0000	
Cathon Black 1333-86-4 Mold Compound 0.205 1.403 2.047 Copper 7440-50-8 Lead Frame 28.055 184-77 269.047 Total 100.00 From 7440-31-5 Lead Frame 0.069 0.474 692 180.88 (mg) Total Lead Frame 9.069 0.474 692 180.88 (mg) Total 180.80 (mg) To									
Copper   7440-50-8   Lead Frame   0.089   0.474   632   19.58   (mg) Total   Lead Frame   5.0895   164.775   299,547   19.58   19.58   (mg) Total   Lead Frame   5.07   10.089   0.474   632   19.58   (mg) Total   Lead Frame   5.07   10.089   0.474   632   19.58   (mg) Total   Lead Frame   5.07   10.089   0.474   10.089   0.474   10.089									
Tin 17440-31-5 Lead Frame (0.527 3.613 5.271 1.200 1.2						Carbon Black			
Siver ( 7440-62-6							Total		
Zinc   7440-86-6   Lead Frame   0.059   0.341   498   Chromium   7440-87-3   Lead Frame   0.059   0.474   692   Silver (Ag)   7440-92-4   Die Attach   0.049   0.474   692   Silver (Ag)   7440-92-4   Die Attach   0.049   0.423   2.902   4.233   EPOXY RESIN   Triads Secret   Die Attach   0.041   0.220   4.08   Dopos Gold   7440-97-5   Wing Bord   0.280   1.919   2.900   Triad   7440-31-5   Rise pre-time   1.900   1.900   1.900   1.900   Triad   1.900   1.900   1.900   1.900   1.900   1.900   1.900   1.900   Triad   1.900   1.900   1.900   1.900   1.900   1.900   1.900   1.900   1.900   1.900   Triad   1.900					189.68	(mg) Total	Lead Frame	% of Total Weight	27.67
Chromium 17440-47-3   Lead Frame   0.069   0.474   692   Silver (Ag)   7440-22-4   Die Attach   0.423   2.902   4.233   NAINTORIDE   Trade Secret   Die Attach   0.046   0.315   459   Silcon   7440-27-3   Chip (Die)   2.050   14.327   20.500   Silcon   7440-27-3   Chip (Die)   2.050   14.327   20.500   Trade Secret   Die Attach   0.041   0.280   4.98   Trade Secret   Die Attach   0.041   0.280   4.98   Trade Secret   Die Attach   0.041   0.280   4.98   Silcon   7440-27-3   Chip (Die)   2.050   14.327   20.500   Trade Silcon   7440-37-5   Fatego a secretal being Bond and princip liver by 1000   1.919   2.800   Trade Secret   Die Attach   7.000,000   Silcon   7440-37-5   Fatego a secretal being Bond as (princip liver)   7074LS: 100.800   68.300   1.000,000   Semiconductor device and its homogenous materials comply with EU Unrecive).  Semiconductor device and its homogenous materials comply with EU Unrecive 2002/35/EC (RoH-5 Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU unaccomplication of the chemical substance is absent from the list above, the chemical substance is NOT an intentional ingrident in the semiconductor device and, to the best of this document, there is no or cribile 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.  In complex service of the date of this document, there is no or cribile reason to believe that the unavoidable impurity concentration of the chemical substance, if one of the date of this document, there is no or cribile reason to believe that the unavoidable impurity concentration of the chemical substance, if one of the date of this document, there is no or cribile reason to believe that the unavoidable impurity concentration of the chemical substance, if one of the date of this document, there is no or cribile reason to believe that the unavoidable impurity concentration of the chemical substance, if the more of the care of the date o						Copper			
Silver (Ag)						Tin			
RAHYDRIDE   Trade Secret   Die Attach   0.046   0.315   459   Chromium   7440-73   0.25   100.00   Silicon   7.440-21-3   Chip (Die)   0.280   1.4.227   20.900   3.50   (mg) Total   408   Total   Valority   Va									
EPOXY RESIN Trade Secret Die Attach 0.041 0.280 408 Silson 1744-021-3 Chip (Die) 2.090 14.327 2.0900 3.30 (mg) Total Die Attach 1740-21-3 Chip (Die) 2.090 14.327 2.0900 3.30 (mg) Total Weight 1740-21-3 Chip (Die) 2.090 14.327 2.0900 3.30 (mg) Total Weight 1740-21-3 Chip (Die) 2.090 14.327 2.0900 3.30 (mg) Total Weight 1740-21-3 Chip (Die) 2.090 3.30 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.30 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.30 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.30 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.090 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1740-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1840-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1840-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1840-21-4 63.00 Chip (Die) 2.090 3.00 (mg) Total Weight 1940-21-4 63.00 Chip (Die) 3.00 (mg) Total Weight 1940-21-4									
Silicon 7440-21-3 Chip (Die) 2.090 14.327 20.900 Silicon PLOP (Die) 2.090 Silicon PLOP						Chromium			
Doped Gold 7440-57-5 Wire Bord 0.280 1.919 2.800 Trin 7440-31-5 Pathgrop neutral leads (perc) - Matter Tor / amended at 950°C for 1 teor 1.220 8.353 1.2200 TOTALS: 100.000 685.50 1,000,000  0.6855 g Total Mass  October 1.2200 8.555 g Total Mass  October 1.2200							Total	100.00	
Tin	Silicon         7440-21-3         Chip (Die)         2.090	0 1	14.327	20,900	3.50	(mg) Total	Die Attach	% of Total Weight	0.51
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 tive 2002/95/EC (RoHs Orl-Life Vehicles (ELV) Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2002/95/EC (RoHs Orl-Life Vehicles (ELV) Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2002/95/EC (RoHs Orl-Life Vehicles (ELV) Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2002/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2002/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2002/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2002/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2002/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2002/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHs Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHS Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHS Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHS Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHS Directive). EU Directive 2011/65/EU (RoHS Recast Directive) and with EU tive 2012/95/EC (RoHS Di	Doped Gold 7440-57-5 Wire Bond 0.280	0 ′	1.919	2,800		Silver (Ag)	7440-22-4	83.00	
0.6855 g Total Mass semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (End-of-Life Vehicles (ELV) Directive).  14.33 (mg) Total Chip (Die) % of Total Weight three 2002/95/EC (End-of-Life Vehicles (ELV) Directive).  15.00 Diance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  16.00 Deped Silicon 7440-21-3 100  17.00 Deped Silicon 7440-21-3 100  18.00						ANHYDRIDE	Trade Secret		
semiconductor device and its homogenous materials comply with EU Directive 2002/55/EC (RoHS Directive), EU Directive) 2002/55/EC (End-of-Life Vehicles (ELV) 2002/55/EC (End-of-Life Vehicles (ELV)	TOTALS: 100.00	00 68	85.500	1,000,000		EPOXY RESIN	Trade Secret	8.00	
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  14.33 (mg) Total  Chip (Die)  % of Total Weight  Doped Silicon  7440-21-3  100.00  Total  Doped Silicon  7440-21-3  100.00  Total  100.00  Total  Doped Silicon  7440-21-3  100.00  Total  Total  Doped Silicon  7440-21-3  100.00  Total  Total  Total  Doped Silicon  7440-21-3  100.00  Total  Doped Silicon  Total  Doped Silicon  7440-21-3  100.00  Total  Doped Silicon  Doped Silicon  Total  Doped Silicon  Doped Silicon  Tot	0.6855 g Total Mass						Total	100.00	
nemical 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 so not below the threshold of regulatory concern for any regulatory scheme world-wide.  In go 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 volution/global/eng/pages/offerings/industries/chemicals/plastics/  In go (mg) Total volution with the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box entain "reels" may be made from PVC plastic.  In go (mg) Total volution with the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box entain "reels" may be made from PVC plastic.  In go (mg) Total volution with the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box entain "reels" may be made from PVC plastic.  In go (mg) Total volution with the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box entain its or material size of the date listed in this form. Microchip Technology Incorporated annot guarantee bumpleteness 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. It is in go (material size of the pack of the		cast Direc	ctive) and w	vith EU	14.33	(mg) Total	Chip (Die)	% of Total Weight	2.09
nemical 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 borated'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 not below the threshold of regulatory concern for any regulatory scheme world-wide.  In go 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. com/global/eng/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 ertain "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated cannot guarantee umpleteness 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. Iteri information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Iteri information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Iteri information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Iteria in to information is often protected from disclosure as trade secrets and some information and not have been provided by subcontract assemblers and raw material suppliers. Iteria in the provided only as estimates of the average weight of these parts and the average weight of microchip's to the parts and	pliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.			Ī		Doned Silicon	7440-21-3	100	
Aut.com/global/eng/pages/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 ertain "reels" may be made from PVC plastic.    Doped Gold   T440-57-5   100.00	porated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentratio						Total	100.00	
borbip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated cannot guarantee ompleteness 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. Idler information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. In the form disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. In the formation is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. In the formation is provided only as estimates of the average weight of these parts and the average weight of in this inclipated significant toxic metals components. These estimates do not deterace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Social Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product any material leads (pins) - Matte Tin / annealed at 150°C for 1 hour.  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour.		ain a test ı	report at	•	1.92	(mg) Total	Wire Bond	% of Total Weight	0.28
ochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices elie 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 completeness and accuracy of data in this form because it has been compiled based on the ranges provided by the as Sheets provided by raw material suppliers. In this form disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. In the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not ude 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 product anticopy in 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 annealed at 150°C for 1 hour.  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour.		e packing	slip on the	outer box		Doped Gold	7440-57-5	100.00	
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 ompleteness 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. It is information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. In the section of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not deterace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Achip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product unities 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 annealed at 150°C for 1 hour.  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour.  % of Total Weight in this form because it has been completed and the ranges 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 annealed at 150°C for 1 hour.							Total	100.00	
(pins) - Matter Tin / annealed at 150°C for 1 hour	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 Ir completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provide	Incorporat ded by rav ers and rav	ited cannot iw material aw material	guarantee suppliers. suppliers.					
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)  Tin 7440-31-5 100.00  Tin 7440-31-5 100.00	ude trace levels of dopants, 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. Ti ranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. T				8.36		(pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.22

PH 144 TQFP 10:39 AM: 5/6/2014

Semiconductor Device Typ	e: ST 08 (Lead)	TSSOP 4.4mm (C5/CN/A4)		nation Base A				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	19.49	(mg) Total	Mold Compound	% ot Total Weight	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)	Trade Secret	Mold Compound	3.617	1.194	36,174		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3. No diantimony trioxide)	Trade Secret	Mold Compound	3.617	1.194	36,174		Phenolic Resin	Trade Secret	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			Total	100.00	
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	01.02
Silicon	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	7440-22-4	Die Attach	0.840	0.010	8.400		Silicon	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	0.033	560		iviagriesium	Total		
	9003-36-5	Die Attach	0.038	0.018	280					
Epoxy Resin						0.37	(mg) Total	Die Attach	% of Total Weight	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	0.601	18,200		Epoxy Resin	9003-36-5	3	
		TOTALS:	100.000	33.000	1,000,000		Epoxy Resin	13561-08-5	3	
semiconductor device and its homogenous materials comply		g Total Mass 2002/95/EC (RoHS Directive) ELL Directive 2011/65/E	II (RoHS Reca	ast Directive) a	and with FII			Total	100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2	2002/95/EC (RoHS Directive), EU Directive 2011/65/E	•	ast Directive) a	ind with EU	2.08	Total (mg)  Doped Silcon	Total  Chip (Die)  7440-21-3	100.00 % of Total Weight	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via in the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulatorical substance, if any, is not below the threshold of regulatorical substance.	ernal design control Il substance is NOT this document, the ry concern for any r	Journal of the superior of the	a. ice and, to the able impurity c	best of Microconcentration	chip of the		Doped Silcon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	6.3
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via in the chemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date on nical substance, if any, is not below the threshold of regulated ling compounds used by Microchip meet the UL94 VO flamma:  //ul.com/global/eng/pages/offerings/industries/chemicals/plaprotective "tubes" in which the specific product is shipped a	ernal design control al substance is NOT this document, the ry concern for any is bility standard for p	Journal of the street of the s	a. ice and, to the able impurity c bases to obtain	best of Micro concentration	chip of the at	2.08	,	Chip (Die) 7440-21-3	% of Total Weight	6.3
s semiconductor device and its homogenous materials complicative 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via in  chemical substance is absent from the list above, the chemical honology Incorporated's knowledge and belief as of the date o  mical substance, if any, is not below the threshold of regulated  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  and certain "reels" may be made from PVC plastic.	ernal design control il substance is NOT this document, the ry concern for any it bility standard for p stics/ e made from polyvi	Journal of the Control of the Contro	a. ice and, to the able impurity c bases to obtain	best of Micro concentration n a test report packing slip o	chip of the at n the outer		Doped Silcon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight  100  100.00  % of Total Weight  100	0.18
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via inchemical substance is absent from the list above, the chemical hology incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulated ding compounds used by Microchip meet the UL94 V0 flammer.//ul.com/global/eng/pages/offerings/industries/chemicals/plaprotective "tubes" in which the specific product is shipped a	with EU Directive 2 ernal design contro Il substance is NOT this document, the ry concern for any I bility standard for p stics/ e made from polyvi is form concerning the best of its knowle cause it has been c sclosure as trade s of the average weig	2002/95/EC (RoHS Directive), EU Directive 2011/65/E  Ils, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor dev re is no credible reason to believe that the unavoid regulatory scheme world-wide.  Ilastics. You can access the UL iQTM family of data myl chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Techn redge and belief, as of the date listed in this form. Mi ompilled based on the ranges provided in Material S cerets and some information may not have been pr th of these parts and the average weight of anticipe	a.  ice and, to the able impurity or bases to obtain add to hold the pology Incorpor crochip Technafety Data She voided by subotted significant	best of Micro- concentration in a test report packing slip of rated's semico- lology Incorpo- gets provided in contract asser t toxic metals in	chip of the  at  n the outer  anductor rated cannot by raw mblers and	0.06	Doped Silcon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight  100  100.00  % of Total Weight  100	0.18
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Inpliance with the above EU Directives has been verified via inchemical 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 regulate ding compounds used by Microchip meet the UL94 V0 flamma:  Including co	with EU Directive 2 ernal design contro al substance is NOT this document, the ry concern for any re bility standard for p stics/ e made from polyvi is form concerning the best of its knowle cause it has been c sclosure as trade s of the average weig and non-metal materi y, express or implie ed and its subsidiar	SU02/95/EC (RoHS Directive), EU Directive 2011/65/E  Ils, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor dev re is no credible reason to believe that the unavoid regulatory scheme world-wide.  Ilastics. You can access the UL iQTM family of data myl chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Techn redge and belief, as of the date listed in this form. Mi ompiled based on the ranges provided in Material S cerets and some information may not have been pr ht of these parts and the average weight of anticipa als contained within silicon devices (silicon IC) in the	a.  ice and, to the able impurity or bases to obtain add to hold the pology Incorpor crochip Technafety Data She voided by subotted significant e finished par declaration. The	best of Micro- concentration  n a test report  packing slip o  rated's semice  lology Incorpo  eets provided i  contract asser  t toxic metals of  ts.	chip of the  at  n the outer  onductor rated cannot by raw mblers and components.	0.06	Doped Silcon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	% of Total Weight  100  100.00  % of Total Weight  100	0.18
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Inpliance with the above EU Directives has been verified via inchemical substance is absent from the list above, the chemical hology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulated ding compounds used by Microchip meet the UL94 V0 flamme but of the complete of the meeting of the me	with EU Directive 2 ernal design contro Il substance is NOT this document, the ry concern for any I bility standard for p stics/ e made from polyvi is form concerning the best of its knowle cause it has been co caclosure as trade so of the average weig d non-metal materi y, express or implie ed and its subsidiar oices.  set to Material Conte rs' reliance on the i	Journal of the series of the date listed in this form. Misompiled based on the ranges provided in Material Secrets and belief, as of the date listed in this form. Misompiled based on the ranges provided in Material Secrets and some information may not have been prior to the parts and the average weight of anticipals contained within silicon devices (silicon IC) in the day, with respect to the information provided in Material Secrets and some information may not have been prior to these parts and the average weight of anticipals contained within silicon devices (silicon IC) in the day, with respect to the information provided in this of its are contained in Microchip's standard terms and the Declarations and shall not be liable for any dament the Declarations and shall not be liable for any dament.	a.  ice and, to the able impurity or bases to obtain and to hold the pology Incorpor crochip Techniafety Data Sheovided by subted significant he finished par declaration. The disconditions or ages, direct or real and the subtempt of the s	best of Micro- concentration  n a test report  packing slip of  rated's semiccology Incorpo- eets provided contract asser at toxic metals of the contract asser at the contract assert and the contract assert at the contract assert as a contract as a c	chip of the  at  In the outer  anductor rated cannot by raw inblers and components.  mited are provided equential or	0.06	Doped Silcon  (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	% of Total Weight  100  100.00  % of Total Weight  100  100.00  % of Total Weight  100.00	0.18

ST 8 TSSOP 10:40 AM : 5/6/2014

MICROCHIP				nation Base A pper Alloy (C	. ,		•	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Semiconductor Device	ce Type: ST 14 (Lead)	TSSOP 4.4mm (D4 / DH)								
		"Contained In"	% Total							
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)		85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.075	2.445	40,751		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.810	1.686	28,104		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.141	0.084	1,405		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	43.249	25.949	432,489			Total		
Nickel	7440-02-0	Lead Frame	1.153	0.692	11,534	27.25	(mg) Total	Lead Frame	% of Total Weight	45.41
Silver	7440-22-4	Lead Frame	0.758	0.455	7,579		Copper	7440-50-8	95.24	
Silicon	7440-21-3 7439-95-4	Lead Frame Lead Frame	0.204 0.045	0.123	2,043 454		Nickel	7440-02-0 7440-22-4	2.54	
Magnesium Silver	7439-95-4 7440-22-4	Lead Frame Die Attach	1.214	0.027	454 12.136		Silver	7440-22-4 7440-21-3	1.67 0.45	
Epoxy resin	Trade Secret	Die Attach Die Attach	0.328	0.728	3,280		Silicon Magnesium	7440-21-3 7439-95-4	0.45	
Metal oxide	Trade Secret	Die Attach	0.049	0.030	492		iviagnesium	7439-93-4 Total		<u>l</u>
Gamma-butyrolactone	96-48-0	Die Attach	0.049	0.030	492	0.98	(mg) Total	Die Attach	% of Total Weight	
Silicon	7440-21-3	Chip (Die)	3.340	2.004	33,400	0.98	Silver	7440-22-4	% of Total Weight	1.04
Gold	7440-21-3	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		Metal oxide	Trade Secret	3	
1111	7440 01 0	TOTALS:	100.000	60.000	1.000.000		Gamma-butyrolactone	96-48-0	3	
	0.0600	g Total Mass		00.000	1,000,000		Camina butyrolacione	Total	100.00	Ц
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
chemical substance is absent from the list above, the cl proprated's knowledge and belief as of the date of this d	hemical substance is NOT a locument, there is no credibl	n intentional ingredient in the semiconductor device a e reason to believe that the unavoidable impurity con					Doped Silicon	7440-21-3 Total	100	
chemical substance is absent from the list above, the ci prporated'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 ff ://ul.com/global/eng/pages/offerings/industries/chemica protective "tubes" in which the specific product is ship	hemical substance is NOT and locument, there is no credibly ny regulatory scheme world- lammability standard for pla- als/plastics/	intentional ingredient in the semiconductor device a e reason to believe that the unavoidable impurity con wide. stics. You can access the UL iQTM family of database	ncentration of t	he chemical s	ubstance, if	0.29	(mg) Total	Total Wire Bond	100.00 % of Total Weight	
chemical substance is absent from the list above, the ci 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 ff :://ul.com/global/eng/pages/offerings/industries/chemical	hemical substance is NOT and locument, there is no credibly ny regulatory scheme world- lammability standard for pla- als/plastics/	intentional ingredient in the semiconductor device a e reason to believe that the unavoidable impurity con wide. stics. You can access the UL iQTM family of database	ncentration of t	he chemical s	ubstance, if	0.29		Total Wire Bond 7440-57-5	% of Total Weight	0.49
chemical substance is absent from the list above, the ci proprated'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 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.	hemical substance is NOT and locument, there is no credibing regulatory scheme world-lammability standard for plants/plastics/ oped are made from polyving on in this form concerning subset of its knowledge and be it has been compiled base trade secrets and some inforeight of these parts and the items to the secrets and some inforeight of these parts and the inforeight of the	in intentional ingredient in the semiconductor device a e reason to believe that the unavoidable impurity con wide.  stics. You can access the UL iQTM family of database of chloride (PVC) plastic. "Window envelopes" used to be be better the date listed in this form. Microchip Technolog elief, as of the date listed in this form. Microchip Tech d on the ranges provided in Material Safety Data Shemation may not have been provided by subcontract a verage weight of anticipated significant toxic metals	es to obtain a to both the pack by Incorporated Incorpora	he chemical si est report at ting slip on the l's semicondu orated cannot y raw material d raw material	e outer box ctor devices guarantee suppliers. suppliers.	0.29	(mg) Total	Total Wire Bond	% of Total Weight	0.49
npliance with the above EU Directives has been verified chemical substance is absent from the list above, the clorporated's knowledge and belief as of the date of this did, is not below the threshold of regulatory concern for an iding compounds used by Microchip meet the UL94 V0 for/ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship a certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the information heir original packing materials is true and correct to the completeness and accuracy of data in this form becaus polier information is often protected from disclosure as the transition is provided only as estimates of the average we ude trace levels of dopants, metals, and non-metal materials is rounded by Microchip Technology Incorporated rochip's quotations, sales order acknowledgement, and	hemical substance is NOT an locument, there is no credibing regulatory scheme world-lammability standard for planals/plastics/ sped are made from polyving on in this form concerning subset of its knowledge and buse it has been compiled base trade secrets and some inforcight of these parts and the iterials contained within siliconvarranty, express or implied, and its subsidiaries are cor	in intentional ingredient in the semiconductor device a e reason to believe that the unavoidable impurity con wide.  stics. You can access the UL iQTM family of database of chloride (PVC) plastic. "Window envelopes" used to betances restricted by RoHS in Microchip Technolog elief, as of the date listed in this form. Microchip Tech do not the ranges provided in Material Safety Data Shee mation may not have been provided by subcontract average weight of anticipated significant toxic metals in devices (silicon IC) in the finished parts.	es to obtain a to be hold the pack by Incorporated noology Incorporated noology Incorporated sassemblers an components.	he chemical si est report at king slip on the l's semicondu orated cannot y raw material These estimate clusive, limiter	e outer box ctor devices guarantee suppliers. es do not d product	0.29	(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.49
hemical substance is absent from the list above, the ci- 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 fi- //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.  pochip Technology Incorporated believes the informatio- perior original packing materials is true and correct to the completeness and accuracy of data in this form becaus siler information is often protected from disclosure as it mation is provided only as estimates of the average we de trace levels of dopants, metals, and non-metal mate- pochip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated	hemical substance is NOT at locument, there is no credibly regulatory scheme world-lammability standard for planals/plastics/ oped are made from polyviny on in this form concerning subsets of its knowledge and beset has been compiled base trade secrets and some inforeight of these parts and the irrials contained within siliconvarranty, express or implied, at and its subsidiaries are continuouses. Changes to Material Content he users' reliance on the infine to the content of the con	in intentional ingredient in the semiconductor device a e reason to believe that the unavoidable impurity con wide.  stics. You can access the UL iQTM family of database of chloride (PVC) plastic. "Window envelopes" used to betances restricted by RoHS in Microchip Technolog elief, as of the date listed in this form. Microchip Tect d on the ranges provided in Material Safety Data Shemation may not have been provided by subcontract average weight of anticipated significant toxic metals in devices (silicon IC) in the finished parts.  with respect to the information provided in this declatatined in Microchip's standard terms and conditions.	es to obtain a to botain a to	est report at ting slip on the l's semiconduc orated cannot y raw material d raw material These estimate clusive, limite are provided i	e outer box ctor devices guarantee suppliers. suppliers. es do not d product in		(mg) Total  Doped Gold	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	0.49
hemical substance is absent from the list above, the ciporated's knowledge and belief as of the date of this dis not below the threshold of regulatory concern for arting 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 tertain "reels" may be made from PVC plastic.  Tochip Technology Incorporated believes the information or original packing materials is true and correct to the completeness and accuracy of data in this form becaus liler information is often protected from disclosure as the mation is provided only as estimates of the average we detrace levels of dopants, metals, and non-metal mate sochip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated cochip's quotations, sales order acknowledgement, and sochip disclaims any duty to notify users of updates or wise, suffered by users or third parties as a result of the supplement of the supplement of the supplement.	hemical substance is NOT at locument, there is no credibly regulatory scheme world-lammability standard for planals/plastics/ oped are made from polyviny on in this form concerning subsets of its knowledge and beset has been compiled base trade secrets and some inforeight of these parts and the irrials contained within siliconvarranty, express or implied, at and its subsidiaries are continuouses. Changes to Material Content he users' reliance on the infine to the content of the con	in intentional ingredient in the semiconductor device a e reason to believe that the unavoidable impurity con wide.  stics. You can access the UL iQTM family of database of chloride (PVC) plastic. "Window envelopes" used to betances restricted by RoHS in Microchip Technolog elief, as of the date listed in this form. Microchip Tect d on the ranges provided in Material Safety Data Shemation may not have been provided by subcontract average weight of anticipated significant toxic metals in devices (silicon IC) in the finished parts.  with respect to the information provided in this declatatined in Microchip's standard terms and conditions.	es to obtain a to botain a to	est report at ting slip on the l's semiconduc orated cannot y raw material d raw material These estimate clusive, limite are provided i	e outer box ctor devices guarantee suppliers. suppliers. es do not d product in		(mg) Total  Doped Gold  (mg) 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	2.28

ST 14 TSSOP 10:40 AM : 5/6/2014

Semiconductor Devic	e Type: ST 16 (Lead)	TSSOP 4.4mm (D8)		nation Base /	•		•	nogeneous Materials: e.g. pc boards, displa		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			22.50	(mg) Total	Mold Compound	% ot Total Weight	34.62
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm			•		
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 Phenolic Resin	Trade Secret Trade Secret	Mold Compound  Mold Compound	3.012 2.077	1.958 1.350	30,119 20,772		Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	8.70 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		Calbuil Black	Total		<u>U</u>
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	Copper	7440-50-8	95.24	40.09
Silicon	7440-22-4	Lead Frame	0.779	0.507	2,101		Nickel	7440-50-8	95.24 2.54	
Magnesium	7439-95-4	Lead Frame	0.047	0.030	467		Silver	7440-02-0	1.67	
Silver	7440-22-4	Die Attach	2.472	1.607	24,716		Silicon	7440-22-4	0.45	
Epoxy resin	Trade Secret	Die Attach	0.668	0.434	6.680		Magnesium	7440-21-3	0.45	
Metal oxide	Trade Secret	Die Attach	0.000	0.434	1.002		Magnesium	7439-95-4 Total		
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	
<u>G</u> old	7440-57-5	Wire Bond	0.610	0.397	6,100		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating 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: q Total Mass	100.000	65.000	1,000,000		Gamma-butyrolactone	96-48-0 <b>Total</b>	3 100.00	<u> </u>
			•	ast Directive)	and with EU	8.02	Total (mg)	Chip (Die)	% of Total Weight	12.34
iance with the above EU Directives has been verified	d via internal design contro		a.	ŕ		8.02	Total (mg)  Doped Silicon	Chip (Die) 7440-21-3 Total	100	
ance with the above EU Directives has been verified mical substance is absent from the list above, the cology incorporated's knowledge and belief as of the all substance, if any, is not below the threshold of reg compounds used by Microchip meet the UL94 V0 for the compounds used by Microchip meet the UL94 V0 for the	d via internal design control chemical substance is NOT date of this document, the egulatory concern for any r flammability standard for p	an intentional ingredient in the semiconductor dev re is no credible reason to believe that the unavoid egulatory scheme world-wide.	a. ice and, to the able impurity o	best of Micro	ochip of the	0.40	1	7440-21-3	100	
ance with the above EU Directives has been verified whical substance is absent from the list above, the cology Incorporated's knowledge and belief as of the hall substance, if any, is not below the threshold of regrompounds used by Microchip meet the UL94 V0 fl.com/global/eng/pages/offerings/industries/chemicatective "tubes" in which the specific product is ship	d via internal design control chemical substance is NOT date of this document, the egulatory concern for any re flammability standard for pals/plastics/	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoid egulatory scheme world-wide.  lastics. You can access the UL iQTM family of data	a. ice and, to the able impurity o bases to obtai	e best of Micro concentration	ochip of the		Doped Silicon	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	0.61
pliance with the above EU Directives has been verified the mical substance is absent from the list above, the conology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of reging compounds used by Microchip meet the UL94 V0 of Vul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.  The protective "tubes in which the specific product is ship and certain "reels" may be made from PVC plastic.  The province in their original packing materials is true and correct of guarantee the completeness and accuracy of data in anterial suppliers. Supplier information is often protect aw material suppliers. Information is provided only as soments. These estimates do not include trace levels of social processing the provided only and the provided only provided by Microchip Technology Incorporated does not provide any fact warranties provided by Microchip Technology Incorporated be incorporated by Microchip Technology Incorporated by M	d via internal design control chemical substance is NOT date of this document, the egulatory concern for any reflammability standard for plats/plastics/ pped are made from polyvious in this form concerning act to the best of its knowle in this form because it has cated from disclosure as tract estimates of the average void dopants, metals, and non warranty, express or implicorporated and its subsidiari	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoid egulatory scheme world-wide.  lastics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" usual substances restricted by RoHS in Microchip Techn dge and belief, as of the date listed in this form. Mibeen compiled based on the ranges provided in Mie secrets and some information may not have bee veight of these parts and the average weight of anti-metal materials contained within silicon devices (ad, with respect to the information provided in this of the secrets and the average weight of these parts and the average weight of anti-metal materials contained within silicon devices (ad, with respect to the information provided in this of the secrets and the average weight of the secrets and some information provided in this of the secrets are secretary.	a.  ice and, to the able impurity of the able impurity of the able to obtain the able to hold the crockip Technaterial Safety E icipated significial in the able to be able to b	be best of Microconcentration in a test repor packing slip o rated's semic nology Incorpo Data Sheets p subcontract a ricant toxic me ne finished pa ne exclusive, I	ochip of the  at at on the outer  onductor orated rovided by assemblers stals rts.		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.61
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 conology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of refling compounds used by Microchip meet the UL94 V0 for the complete of t	d via internal design control chemical substance is NOT date of this document, the egulatory concern for any reflammability standard for pals/plastics/ pped are made from polyvion in this form concerning exect to the best of its knowle in this form because it has sted from disclosure as trace estimates of the average word of dopants, metals, and non warranty, express or implie orroporated and its subsidiariand invoices.  changes to Material Contest the users' reliance on the interpretation of the inte	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoid egulatory scheme world-wide.  lastics. You can access the UL iQTM family of data myl chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Technidge and belief, as of the date listed in this form. Mi been compiled based on the ranges provided in Microcherts and some information may not have bee veight of these parts and the average weight of anti-metal materials contained within silicon devices (ed., with respect to the information provided in this dies are contained in Microchip's standard terms and the Declarations and shall not be liable for any dament	a.  ice and, to the able impurity of the able impur	e best of Microconcentration in a test repor packing slip of rated's semicology Incorpo Data Sheets p subcontract a ficiant toxic me e finished pa ne exclusive, I of sale. These indirect, cons	ochip of the  at at on the outer onductor orated rovided by assemblers etals imited are provided sequential or	0.40	Doped 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 hour.  7440-31-5	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.61
liance with the above EU Directives has been verified temical substance is absent from the list above, the cology Incorporated's knowledge and belief as of the cal substance, if any, is not below the threshold of reing compounds used by Microchip meet the UL94 V0 ful.com/global/eng/pages/offerings/industries/chemicarotective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.  The prochology Incorporated believes the informatic is in their original packing materials is true and correct guarantee the completeness and accuracy of data is aterial suppliers. Supplier information is often protective material suppliers. Information is provided only as onents. These estimates do not include trace levels of the complete provided by Microchip Technology Incorporated does not provide any tot warranties provided by Microchip Technology Incorporated of the provided prochip's quotations, sales order acknowledgement, achip disclaims any duty to notify users of updates or wise, suffered by users or third parties as a result of the provider of the provided by users of the provider of the p	d via internal design control chemical substance is NOT date of this document, the egulatory concern for any reflammability standard for pals/plastics/ pped are made from polyvion in this form concerning exect to the best of its knowle in this form because it has sted from disclosure as trace estimates of the average word of dopants, metals, and non warranty, express or implie orroporated and its subsidiariand invoices.  changes to Material Contest the users' reliance on the interpretation of the inte	an intentional ingredient in the semiconductor device is no credible reason to believe that the unavoid egulatory scheme world-wide.  lastics. You can access the UL iQTM family of data myl chloride (PVC) plastic. "Window envelopes" use substances restricted by RoHS in Microchip Technidge and belief, as of the date listed in this form. Mi been compiled based on the ranges provided in Microcherts and some information may not have bee veight of these parts and the average weight of anti-metal materials contained within silicon devices (ed., with respect to the information provided in this dies are contained in Microchip's standard terms and the Declarations and shall not be liable for any dament	a.  ice and, to the able impurity of the able impur	e best of Microconcentration in a test repor packing slip of rated's semicology Incorpo Data Sheets p subcontract a ficiant toxic me e finished pa ne exclusive, I of sale. These indirect, cons	ochip of the  at at on the outer onductor orated rovided by assemblers etals imited are provided sequential or	0.40	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 hour.	100 100.00 % of Total Weight 100 100.00 % of Total Weight	2.4

ST 16 TSSOP 10:40 AM : 5/6/2014

AICROCHIP  Semiconductor Device	e Type: ST 20 (Lead)	TSSOP 4.4mm (G2 / GE)		nation Base A				nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	"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	
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	
Nickel	7440-02-0	Lead Frame	1.086	0.847	10,861	33.35	(mg) Total	Lead Frame	% of Total Weight	42.76
Silver	7440-22-4	Lead Frame	0.714	0.557	7,137		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.192	0.150	1,924		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.043	0.033	428		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	1.317	1.027	13,172		Silicon	7440-21-3	0.45	
Epoxy resin	Trade Secret	Die Attach	0.356	0.278	3,560		Magnesium	7439-95-4	0.10	
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		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	
	7110010	TOTALS:	100.000	78.000	1.000.000		Gamma-butyrolactone	96-48-0	3	
	0.0790		100.000	10.000	1,000,000		Gamma-butyrolactorie	Total	100.00	
		g Total Mass							.00.00	
emiconductor device and its homogenous materials	comply with FU Directive 20									
		502/33/EG (NOTIS Directive), EG Directive 2011/03/1	EU (ROHS Reca	ast Directive)	and with EU	3.66	Total (mg)	Chip (Die)	% of Total Weight	4.69
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		, , , , , , , , , , , , , , , , , , , ,	•	ast Directive)	and with EU	3.66	Total (mg)  Doped Silicon	7440-21-3	100	4.69
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 cloology Incorporated's knowledge and belief as of the	I via internal design control themical substance is NOT a date of this document, then	s, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor dev e is no credible reason to believe that the unavoid	a. rice and, to the	e best of Micro	chip	3.66	1			4.69
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 cloology Incorporated's knowledge and belief as of the clical substance, if any, is not below the threshold of reng compounds used by Microchip meet the UL94 V0 f	. I via internal design controls themical substance is NOT a date of this document, then egulatory concern for any re	s, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor dev e is no credible reason to believe that the unavoid gulatory scheme world-wide.	a. vice and, to the lable impurity o	e best of Micro	ochip of the	0.42	1	7440-21-3	100	4.69 0.54
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Iliance with the above EU Directives has been verified nemical substance is absent from the list above, the cloology Incorporated's knowledge and belief as of the ical substance, if any, is not below the threshold of reing compounds used by Microchip meet the UL94 V0 ful.com/global/eng/pages/offerings/industries/chemical	. I via internal design controls shemical substance is NOT a date of this document, there egulatory concern for any re flammability standard for pla als/plastics/	s, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor dev e is no credible reason to believe that the unavoid egulatory scheme world-wide. astics. You can access the UL iQTM family of data	a. rice and, to the able impurity of bases to obtai	best of Micro concentration	ochip of the		Doped Silicon  (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	
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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 clandogy Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of rediing compounds used by Microchip meet the UL94 V0 for clandog belief as of the emical substance, if any, is not below the threshold of rediing compounds used by Microchip meet the UL94 V0 for clandog belief and complete protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the informationices in their original packing materials is true and correct in the protective to the protective transpliers. Supplier information is often protect raw material suppliers. Supplier information is provided only as apponents. These estimates do not include trace levels o	I via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any re flammability standard for pla als/plastics/ pped are made from polyvin on in this form concerning s act to the best of its knowled in this form because it has b sted from disclosure as trad i estimates of the average w	s, supplier declarations, and /or analytical test dat an intentional ingredient in the semiconductor deve is no credible reason to believe that the unavoid egulatory scheme world-wide.  astics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Microchipide in the secrets and some information may not have bee leight of these parts and the average weight of an	a.  ice and, to the able impurity of bases to obtained to hold the sology Incorporaterial Safety I m provided by icipated significations.	e best of Micro concentration in a test report packing slip or rated's semicrology Incorpo Data Sheets pi subcontract a icant toxic me	of the  at at  on the outer  onductor  orated  rovided by  assemblers  stals		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).  ppliance with the above EU Directives has been verified  chemical substance is absent from the list above, the clanology Incorporated's knowledge and belief as of the emical substance, if any, is not below the threshold of re- diing compounds used by Microchip meet the UL94 V0 foot/ful.com/global/eng/pages/offerings/industries/chemical  protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.  ochip Technology Incorporated believes the information  ces in their original packing materials is true and corre  not guarantee the completeness and accuracy of data in  material suppliers. Supplier information is often protect  raw material suppliers. Information is provided only as	I via internal design controls chemical substance is NOT a date of this document, there egulatory concern for any re flammability standard for pla als/plastics/ pped are made from polyvin on in this form concerning s act to the best of its knowled in this form because it has b cted from disclosure as trad te estimates of the average w of dopants, metals, and non- warranty, express or implied proporated and its subsidiarie	s, supplier declarations, and /or analytical test data intentional ingredient in the semiconductor deceis no credible reason to believe that the unavoid egulatory scheme world-wide.  astics. You can access the UL iQTM family of data anyl chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technique and belief, as of the date listed in this form. Microchipelled based on the ranges provided in Meen compilled based on the ranges provided in the secrets and some information may not have beereight of these parts and the average weight of anti-metal materials contained within silicon devices (d, with respect to the information provided in this ed.,	a.  vice and, to the lable impurity of bases to obtain the label of th	e best of Micro concentration in a test report packing slip of rated's semicrology Incorpo Data Sheets pri subcontract a ficant toxic me re finished par me exclusive, I	or the outer onductor or o		Doped Silicon  (mg) Total  Doped Gold	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % 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 clinology Incorporated's knowledge and belief as of the nical substance, if any, is not below the threshold of reing compounds used by Microchip meet the UL94 V0 ft/ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic. The protective in their original packing materials is true and corrective in their original packing materials is true and corrective in their original packing materials is true and corrective in their original packing materials is true and corrective in their original packing materials is true and corrective in their original packing materials is true and corrective in their original packing materials is true and corrective in their original packing materials is true and corrective in the protective in the	I via internal design controls of via internal design controls chemical substance is NOT a date of this document, there agulatory concern for any ref [flammability standard for plants/plastics/pped are made from polyvin on in this form concerning sect to the best of its knowlet in this form because it has better the stimates of the average word of dopants, metals, and non-warranty, express or implied proporated and its subsidiarie and invoices.  Changes to Material Contenthe users' reliance on the in	s, supplier declarations, and /or analytical test data intentional ingredient in the semiconductor develor is no credible reason to believe that the unavoid gulatory scheme world-wide.  astics. You can access the UL iQTM family of data by chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Microchip Technologe and belief, as of the date listed in this form. Microchip to these parts and the average weight of anti-metal materials contained within silicon devices (Id., with respect to the information provided in this es are contained in Microchip's standard terms and the pectangular to the services of	a.  vice and, to the lable impurity of bases to obtain the label of th	e best of Micro concentration in a test report packing slip of rated's semicology Incorpo Data Sheets pi subcontract a ciicant toxic me ne finished pai	or the outer on the outer or th	0.42	Doped 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 hour  7440-31-5	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.54
etive 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 clinology Incorporated's knowledge and belief as of the enical substance, if any, is not below the threshold of  inig compounds used by Microchip meet the UL94 Vo fiful.com/global/eng/pages/offerings/industries/chemical  protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.  protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.  protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.  protective "tubes" in formation is in their original packing materials is true and correct of guarantee the completeness and accuracy of data in  material suppliers. Supplier information is often protect  and material suppliers. Information is provided only as  protective "tubes" in which the specific product only as  protective "tubes" in which the specific product only as  protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.   protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.   protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.   protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.   protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.   protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.   protective "tubes" in which the specific product is ship  and certain "reels" may be made from PVC plastic.   protective "tubes" in which the specific product is ship  and certain "tubes" in the tubes of the tubes  and tubes and tubes   protective "tubes" in the tubes  and tubes and tubes  an	I via internal design controls of via internal design controls chemical substance is NOT a date of this document, there agulatory concern for any ref [flammability standard for plants/plastics/pped are made from polyvin on in this form concerning sect to the best of its knowlet in this form because it has better the stimates of the average word of dopants, metals, and non-warranty, express or implied proporated and its subsidiarie and invoices.  Changes to Material Contenthe users' reliance on the in	s, supplier declarations, and /or analytical test data intentional ingredient in the semiconductor develor is no credible reason to believe that the unavoid gulatory scheme world-wide.  astics. You can access the UL iQTM family of data by chloride (PVC) plastic. "Window envelopes" us substances restricted by RoHS in Microchip Technologe and belief, as of the date listed in this form. Microchip Technologe and belief, as of the date listed in this form. Microchip to these parts and the average weight of anti-metal materials contained within silicon devices (Id., with respect to the information provided in this es are contained in Microchip's standard terms and the pectangular to the services of	a.  vice and, to the lable impurity of bases to obtain the label of th	e best of Micro concentration in a test report packing slip of rated's semicology Incorpo Data Sheets pi subcontract a ciicant toxic me ne finished pai	or the outer on the outer or th	0.42	(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	0.54

ST 14 TSSOP 10:40 AM : 5/6/2014

NICROCHIP  Semiconductor Device	e Type: QU8E 08 (Lead)	USON/UDFN 2x2x0.55mm (QN)		nation Base / pper Alloy (0				ogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Produ Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	9.40	(mg) Total	Mold Compound	% ot Total Weight	75.18
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	Trade Secret	Mold Compound	3,646	0.456	36,462		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.226	0.028	2,255		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	20.505	2.563	205,054			Total	100.00	
Nickel	7440-02-0	Lead Frame	0.547	0.068	5,469	2.69	(mg) Total	Lead Frame	% of Total Weight	21.53
Silicon	7440-21-3	Lead Frame	0.097	0.012	969		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.022	0.003	215		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.359	0.045	3.593		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.800	0.100	8,000		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2,000		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900		U-	Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100	0.13	(mg) Total	Die Attach	% of Total Weight	1.00
Tin	7440-31-5 Platii	ing on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.890	0.111	8,900		Silver	7440-22-4	80.00	
		TOTALS:	100.000	12.500	1,000,000		Epoxy Resin	Trade secret	20.00	
									100.00	
	0.0125 a T	otal Mass						Total	100.00	
		Otal Mass EC (RoHS Directive), EU Directive 2011/65/EU (Rol	HS Recast Di	rective) and w	rith EU	0.14	(mg) Total	Total Chip (Die)	% of Total Weight	1.09
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified vi	mply with EU Directive 2002/95/b a internal design controls, supp	EC (RoHS Directive), EU Directive 2011/65/EU (Rol lier declarations, and /or analytical test data.		,	rith EU	0.14 Doped GaAs	(mg) Total  Gallium arsenide	1	% of Total Weight	1.09
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Iliance with the above EU Directives has been verified vinemical substance is absent from the list above, the che hology Incorporated's knowledge and belief as of the dat ance, if any, is not below the threshold of regulatory con	mply with EU Directive 2002/95/t a internal design controls, supp mical substance is NOT an inter e of this document, there is no o icern for any regulatory scheme	EC (RoHS Directive), EU Directive 2011/65/EU (Rol dier declarations, and /or analytical test data. ntional ingredient in the semiconductor device and credible reason to believe that the unavoidable im world-wide.	d, to the best purity concer	of Microchip ntration of the		Doped GaAs	Gallium arsenide	Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified vinemical substance is absent from the list above, the che nology Incorporated's knowledge and belief as of the dat lance, if any, is not below the threshold of regulatory coing compounds used by Microchip meet the UL94 V0 flar	mply with EU Directive 2002/95/t a internal design controls, supp mical substance is NOT an inter te of this document, there is no acern for any regulatory scheme annability standard for plastics.	EC (RoHS Directive), EU Directive 2011/65/EU (Rol dier declarations, and /or analytical test data. ntional ingredient in the semiconductor device and credible reason to believe that the unavoidable im world-wide.	d, to the best purity concer	of Microchip ntration of the				Chip (Die)	% of Total Weight	0.31
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified vischemical substance is absent from the list above, the che anology incorporated's knowledge and belief as of the datatance, if any, is not below the threshold of regulatory couling 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 shippy	mply with EU Directive 2002/95/th a internal design controls, supp mical substance is NOT an inter te of this document, there is no ocern for any regulatory scheme nmability standard for plastics.	EC (RoHS Directive), EU Directive 2011/65/EU (Rollier declarations, and /or analytical test data.  Intional ingredient in the semiconductor device and credible reason to believe that the unavoidable im a world-wide.  You can access the UL iQTM family of databases	d, to the best apurity concer to obtain a te	of Microchip ntration of the st report at	e chemical	Doped GaAs	Gallium arsenide	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	% of Total Weight  100  100.00  % of Total Weight  100.00	
semiconductor device and its homogenous materials co- ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified vi- chemical substance is absent from the list above, the che chology Incorporated's knowledge and belief as of the dat stance, if any, is not below the threshold of regulatory co- ting compounds used by Microchip meet the UL94 V0 flar iful.com/global/eng/pages/offerings/industries/chemicals. protective "tubes" in which the specific product is shipper certain "reels" may be made from PVC plastic.  ochip Technology Incorporated believes the information in ces in their original packing materials is true and correct antee the completeness and accuracy of data in this forn oliers. Supplier information is often protected from disclo- oliers. Information is provided only as estimates of the av mates do not include trace levels of dopants, metals, and	mply with EU Directive 2002/95/t a internal design controls, supp mical substance is NOT an inter- te of this document, there is no o- ncern for any regulatory scheme normability standard for plastics. I plastics/ ed are made from polyvinyl chlor on this form concerning substan- to the best of its knowledge and to because it has been compiled in sure as trade secrets and some erage weight of these parts and	EC (RoHS Directive), EU Directive 2011/65/EU (Rol ilier declarations, and /or analytical test data.  Intional ingredient in the semiconductor device and credible reason to believe that the unavoidable im a world-wide.  You can access the UL iQTM family of databases  ride (PVC) plastic. "Window envelopes" used to h  ces restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip based on the ranges provided in Material Safety D information may not have been provided by subc the average weight of anticipated significant toxic	d, to the best apurity concert to obtain a te cold the packing precipitation of the precipita	of Microchip ntration of the st report at ng slip on the s semiconduc Incorporated rovided by rai mblers and rai	outer box ctor I cannot w material w material	Doped GaAs	Gallium arsenide	Chip (Die) 1303-00-0 Total Wire Bond	% of Total Weight  100  100.00  % of Total Weight  100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ippliance with the above EU Directives has been verified victorial substance is absent from the list above, the che  nology Incorporated's knowledge and belief as of the dat  stance, if any, is not below the threshold of regulatory co- stance, if any, is not below the threshold of regulatory co- stance, if any, is not below the threshold of regulatory co- stance, if any, is not below the threshold of regulatory co- stance, if any, is not below the threshold of regulatory co- stance "the UL94 V0 flar t//ul.com/global/eng/pages/offerings/industries/chemicals. protective "tubes" in which the specific product is shipped  certain "reels" may be made from PVC plastic.  ochip Technology Incorporated believes the information in  ces in their original packing materials is true and correct  antee the completeness and accuracy of data in this form  oliters. Supplier information is often protected from disclo- oliters. Information is provided only as estimates of the av	mply with EU Directive 2002/95/t a internal design controls, supp mical substance is NOT an inter- te of this document, there is no o- cern for any regulatory scheme nomability standard for plastics. I plastics/ ed are made from polyvinyl chlor on this form concerning substan- to the best of its knowledge and to because it has been compiled in the best of its knowledge and to be a trade secrets and some erage weight of these parts and non-metal materials contained we tranty, express or implied, with r and its subsidiaries are contained	EC (RoHS Directive), EU Directive 2011/65/EU (Rol ilier declarations, and /or analytical test data.  ntional ingredient in the semiconductor device and credible reason to believe that the unavoidable im e world-wide.  You can access the UL iQTM family of databases  ride (PVC) plastic. "Window envelopes" used to h  ces restricted by RoHS in Microchip Technology I d belief, as of the date listed in this form. Microchip based on the ranges provided in Material Safety E information may not have been provided by subc the average weight of anticipated significant toxic within silicon devices (silicon IC) in the finished pa respect to the information provided in this declara	d, to the best purity concert to obtain a te sold the packing prechange part of the packing prechange part asser contract asser cometals comparts.	of Microchip ntration of the st report at ng slip on the s semiconduc ncorporated rovided by ra- mblers and ra- ponents. The	outer box ctor I cannot w material w material se	Doped GaAs	Gallium arsenide	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00 100.00	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  upliance with the above EU Directives has been verified victories with the above EU Directives has been verified victories and solves the chanology Incorporated's knowledge and belief as of the data stance, if any, is not below the threshold of regulatory conting compounds used by Microchip meet the UL94 V0 flar (ful.com/global/eng/pages/offerings/industries/chemicals. protective "tubes" in which the specific product is shipped certain "reels" may be made from PVC plastic.  ochip Technology Incorporated believes the information in ces in their original packing materials is true and correct cantee the completeness and accuracy of data in this formoliers. Supplier information is often protected from disclobaliers. Information is provided only as estimates of the average and accuracy of complete the completeness and accuracy of data in this formoliers. Supplier information is often protected from disclobaliers. Information is provided only as estimates of the average and accuracy of the average accuracy of the average and accuracy of the average accur	mply with EU Directive 2002/95/t a internal design controls, suppinical substance is NOT an interie of this document, there is no accern for any regulatory scheme inmability standard for plastics. 'I plastics/ et are made from polyvinyl chlorie are made from polyvinyl substance to the best of its knowledge and because it has been compiled is sure as trade secrets and some erage weight of these parts and non-metal materials contained voices.  The property of	EC (RoHS Directive), EU Directive 2011/65/EU (Rol ilier declarations, and /or analytical test data. Intional ingredient in the semiconductor device and credible reason to believe that the unavoidable im a world-wide.  You can access the UL iQTM family of databases ride (PVC) plastic. "Window envelopes" used to have restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip based on the ranges provided in Material Safety E information may not have been provided by subcomposition of the saverage weight of anticipated significant toxic within silicon devices (silicon IC) in the finished parespect to the information provided in this declarated in Microchip's standard terms and conditions of urations and shall not be liable for any damages, d	d, to the best apurity concert to obtain a term old the packing prechange of the prechange	of Microchip ntration of the st report at ng slip on the s semiconduc i Incorporated rovided by ramblers and ramponents. The clusive, limited are provided i	outer box ctor ccannot w material w material se d product n	Doped GaAs  0.04	Gallium arsenide  (mg) Total  Doped Gold	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	% of Total Weight 100 100.00 % of Total Weight 100.00 400.00 % of Total Weight 100.00	0.31

QU8E 08 USON\_UDFN 10:41 AM: 5/6/2014

ICROCHIP  Semiconductor Device Ty	oo: OHAE OR	Lead) USON 2x2x0.55mm (UA)	-	nation Base A				nogeneous Materials: (e.g. pc boards, display:	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Ty	De. QUAE 08	"Contained In"	% Total			9.40	(mg) Total	Mold Compound	% ot Total Weight	75.18
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	9.40	(mg) i otai	Moia Compouna	% of Total Weight	75.18
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	Trade Secret	Mold Compound	3.646	0.456	36,462		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.226	0.028	2,255		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	20.505	2.563	205,054			Total	100.00	- · · · · · · · · · · · · · · · · · · ·
Nickel	7440-02-0	Lead Frame	0.547	0.068	5,469	2.69	(mg) Total	Lead Frame	% of Total Weight	21.53
Silicon	7440-21-3	Lead Frame	0.097	0.012	969		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.022	0.003	215		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.359	0.045	3,593		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.800	0.100	8,000		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2,000		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900			Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100	0.13	(mg) Total	Die Attach	% of Total Weight	1.00
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.890	0.111	8,900	****	Silver	7440-22-4	80.00	
***		TOTALS:		12.500	1.000.000		Epoxy Resin	Trade secret	20.00	
	0.0425			.2.000	1,000,000		Ероху Позіп	Total		
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 interesting the control of th	with EU Directive 200 rnal design controls,	supplier declarations, and /or analytical test data.		·		0.14 Doped GaAs	(mg) Total  Gallium arsenide	Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	1.09
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 200 rnal design controls, substance is NOT an his document, there i	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device an s no credible reason to believe that the unavoidable in	id, to the best	of Microchip			1	Chip (Die) 1303-00-0	100	1.09
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified via intended in the list above, the chemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of	with EU Directive 200 rnal design controls, substance is NOT an his document, there i for any regulatory sc ility standard for plas	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device an s no credible reason to believe that the unavoidable in heme world-wide.	d, to the best	of Microchip entration of th			1	Chip (Die) 1303-00-0	100	0.31
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified via intended in the second of the characteristic state of the date of tance, if any, is not below the threshold of regulatory concerning compounds used by Microchip meet the UL94 V0 flammating compo	with EU Directive 200 rnal design controls, substance is NOT an his document, there i for any regulatory sc ility standard for plas ics/	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device an s no credible reason to believe that the unavoidable in heme world-wide. tics. You can access the UL iQTM family of databases	nd, to the best npurity conce to obtain a to	of Microchip entration of th	e chemical	Doped GaAs	Gallium arsenide	Chip (Die) 1303-00-0 Total	100	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via intended in the hemical substance is absent from the list above, the chemical nology Incorporated's knowledge and belief as of the date of tance, if any, is not below the threshold of regulatory concerning compounds used by Microchip meet the UL94 V0 flammat /ul.com/global/eng/pages/offerings/industries/chemicals/plasiorotective "tubes" in which the specific product is shipped and	with EU Directive 200 rnal design controls, substance is NOT an his document, there i for any regulatory sc iility standard for plas ics/ made from polyvinyl form concerning sul best of its knowledg ause it has been com as trade secrets and s weight of these parts	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rosupplier declarations, and /or analytical test data.  intentional ingredient in the semiconductor device an since redible reason to believe that the unavoidable in heme world-wide.  tics. You can access the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to least a compare the control of the control	id, to the best inpurity conce to obtain a to hold the pack Incorporated ip Technolog Data Sheets p contract asse ic metals com	of Microchip entration of th est report at ing slip on the 's semicondu y Incorporate rovided by ra mblers and re	e chemical e outer box ctor d cannot aw material w material	Doped GaAs	Gallium arsenide	Chip (Die) 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 via intender of the discovered of the discov	with EU Directive 200 rnal design controls, substance is NOT an his document, there i for any regulatory sc ility standard for plas ics/ made from polyvinyl best of its knowledg ause it has been com as trade secrets and s weight of these parts netal materials contai , express or implied, subsidiaries are con	2795/EC (RoHS Directive), EU Directive 2011/65/EU (Rosupplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device an since redible reason to believe that the unavoidable in heme world-wide.  Itics. You can access the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to least on the set of the date listed in this form. Microchipled based on the ranges provided in Material Safety is used to least on the same provided by substances restricted by RoHS in Microchipled based on the ranges provided in Material Safety is and the average weight of anticipated significant toxined within silicon devices (silicon IC) in the finished pwith respect to the information provided in this declar	id, to the best inpurity conce to obtain a to hold the pack Incorporated ip Technolog Data Sheets p contract as ic metals com arts.	of Microchip entration of the est report at ing slip on the 's semicondu y Incorporate provided by re mblers and re uponents. The	e chemical e outer box ctor d cannot w material w material sse d product	Doped GaAs	Gallium arsenide	Chip (Die) 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 via interpretation of the discovered of the	with EU Directive 200 rnal design controls, substance is NOT an his document, there i for any regulatory sc ility standard for plas ics/ made from polyvinyl form concerning sul best of its knowledg ause it has been com as trade secrets and s weight of these parts netal materials contai , express or implied, subsidiaries are cont s. s to Material Content i s' reliance on the info	2795/EC (RoHS Directive), EU Directive 2011/65/EU (Rosupplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device an son credible reason to believe that the unavoidable in heme world-wide.  Itics. You can access the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to lead to the control of the date listed in this form. Microchip and belief, as of the date listed in this form. Microchipiled based on the ranges provided in Material Safety is one information may not have been provided by substance and the average weight of anticipated significant toxined within silicon devices (silicon IC) in the finished putth respect to the information provided in this declaratined in Microchip's standard terms and conditions of Declarations and shall not be liable for any damages, of provider and conditions and shall not be liable for any damages, of the conditions and shall not be liable for any damages, of the conditions and shall not be liable for any damages, of the conditions and shall not be liable for any damages, or the conditions and shall not be liable for any damages, or the conditions and shall not be liable for any damages, or the conditions and shall not be liable for any damages, or the conditions are conditions and shall not be liable for any damages.	id, to the best inpurity concests to obtain a to hold the pack incorporated ip Technolog Data Sheets prontract asset ic metals comparts.  ation. The exit of sale. These indirect or indir	of Microchip entration of the est report at ing slip on the 's semicondu y Incorporate provided by ramblers and rambonents. The clusive, limite are provided	e chemical e outer box ctor d cannot w material w material sse d product in	Doped GaAs	Gallium arsenide	Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  liance with the above EU Directives has been verified via interemical substance is absent from the list above, the chemical ology Incorporated's knowledge and belief as of the date of ance, if any, is not below the threshold of regulatory concerning compounds used by Microchip meet the UL94 V0 flammat ul.com/global/eng/pages/offerings/industries/chemicals/plastrotective "tubes" in which the specific product is shipped are retain "reels" may be made from PVC plastic.  Chip Technology Incorporated believes the information in this is in their original packing materials is true and correct to the thee the completeness and accuracy of data in this form becers. Supplier information is often protected from disclosure ers. Information is provided only as estimates of the average ates do not include trace levels of dopants, metals, and non-thip Technology Incorporated does not provide any warranty nities provided by Microchip Technology Incorporated and its chip's quotations, sales order acknowledgement, and invoice thip disclaims any duty to notify users of updates or change wise, suffered by users or third parties as a result of the user	with EU Directive 200 rnal design controls, substance is NOT an his document, there i for any regulatory sc ility standard for plas ics/ made from polyvinyl form concerning sul best of its knowledg ause it has been com as trade secrets and s weight of these parts netal materials contai , express or implied, subsidiaries are cont s. s to Material Content i s' reliance on the info	2795/EC (RoHS Directive), EU Directive 2011/65/EU (Rosupplier declarations, and /or analytical test data.  Intentional ingredient in the semiconductor device an son credible reason to believe that the unavoidable in heme world-wide.  Itics. You can access the UL iQTM family of databases chloride (PVC) plastic. "Window envelopes" used to lead to the control of the date listed in this form. Microchip and belief, as of the date listed in this form. Microchipiled based on the ranges provided in Material Safety is one information may not have been provided by substance and the average weight of anticipated significant toxined within silicon devices (silicon IC) in the finished putth respect to the information provided in this declaratined in Microchip's standard terms and conditions of Declarations and shall not be liable for any damages, of provider and conditions and shall not be liable for any damages, of the conditions and shall not be liable for any damages, of the conditions and shall not be liable for any damages, of the conditions and shall not be liable for any damages, or the conditions and shall not be liable for any damages, or the conditions and shall not be liable for any damages, or the conditions and shall not be liable for any damages, or the conditions are conditions and shall not be liable for any damages.	id, to the best inpurity concests to obtain a to hold the pack incorporated ip Technolog Data Sheets prontract asset ic metals comparts.  ation. The exit of sale. These indirect or indir	of Microchip entration of the est report at ing slip on the 's semicondu y Incorporate provided by ramblers and rambonents. The clusive, limite are provided	e chemical e outer box ctor d cannot w material w material sse d product in	Doped GaAs	(mg) Total  Doped Gold	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	100 100.00 % of Total Weight 100.00	0.31

QUAE 08 USON 10:41 AM : 5/6/2014

MICROCHIP  Semiconductor Device	e Type: QX6E 06 (Le	ead) XSON 1.5x1.5x0.45mm (QX)	-	ination Base opper 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	% Total 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	1
Epoxy Resin	Trade Secret	Mold Compound  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		Carbon Black	Total	0.00	J
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	1.02	Copper	7440-50-8	95.24	24.00
Magnesium	7439-95-4	Lead Frame	0.025	0.007	249		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.025	0.002	4.152		Silicon	7440-02-0	0.45	
Aa	7440-22-4	Die Attach	0.990	0.023	9,900	1	Magnesium	7439-95-4	0.43	
Epoxy resin	Trade secret	Die Attach	0.198	0.000	1,980		Silver	7440-22-4	1.67	
Aliphatic anhydride	Trade secret	Die Attach	0.066	0.004	660	1	Olivei	Total		l
2-Butoxyethyl acetate	112-07-2	Die Attach	0.000	0.004	330	0.08	/mm) Total	Die Attach	% of Total Weight	1.32
Polymeric material	Trade secret	Die Attach	0.033	0.002	330	0.08	(mg) Total	7440-22-4	75.00	1.32
Silicon	1303-00-0	Chip (Die)	3.630	0.002	36,300		Ag Epoxy resin	Trade secret	15.00	
							1 . /			
Au impurity	7440-57-5 Misc.	Wire Bond Wire Bond	0.590	0.036	5,899 1		Aliphatic anhydride	Trade secret 112-07-2	5.00 2.50	
Tin	7440-31-5				10,300		2-Butoxyethyl acetate		2.50	
III	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.030	0.063			Polymeric material	Trade secret	_	
		TOTALS:	100.000	6.100	1,000,000			Total	100.00	
	0.0061	g Total Mass								
						0.22	(mg) Total	Chip (Die)	% of Total Weight	3.63
This semiconductor device and its homogenous materials or Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	. ,	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (	RoHS Recasi	t Directive) an	d with EU	0.22 Doped GaAs	(mg) Total GaAs	1303-00-0 Total	% of Total Weight 100 100.00	3.63
	via internal design controls nemical substance is NOT a date of this document, there	20295/EC (RoHS Directive), EU Directive 2011/65/EU ( , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device	and, to the b	est of Microcl	nip			1303-00-0	100	0.59
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Compliance with the above EU Directives has been verified f a chemical substance is absent from the list above, the clean of the control of	via internal design controls nemical substance is NOT a date of this document, there gulatory concern for any re lammability standard for pla	over the control of t	and, to the be	est of Microcl	nip f the	Doped GaAs	GaAs	1303-00-0 Total	100.00	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified if a chemical substance is absent from the list above, the clifechnology incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of regulating compounds used by Microchip meet the UL94 V0 file.	via internal design controls nemical substance is NOT a date of this document, there gulatory concern for any re- lammability standard for pla ls/plastics/	02/95/EC (RoHS Directive), EU Directive 2011/65/EU ( , supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide. stics. You can access the UL iQTM family of databas	and, to the be impurity co	est of Microcl ncentration of a test report a	nip f the t	Doped GaAs	GaAs (mg) Total	1303-00-0 Total Wire Bond 7440-57-5 Misc.	100 100.00 % of Total Weight 99.99	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified f a chemical substance is absent from the list above, the chechology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of rewindling compounds used by Microchip meet the UL94 V0 flattp://ul.com/global/eng/pages/offerings/industries/chemical	via internal design controls nemical substance is NOT a date of this document, there gulatory concern for any relammability standard for plaus/plastics/ uped are made from polyving in in this form concerning sict to the best of its knowled irm because it has been corom disclosure as trade sec nates of the average weight	02/95/EC (RoHS Directive), EU Directive 2011/65/EU ( , supplier declarations, and /or analytical test data.  n intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide.  stics. You can access the UL iQTM family of databas of the control of these parts and the average weight of anticipated of these parts and the average weight of anticipated	and, to the bestimpurity consess to obtain a consess on hold the particular type of the consess	est of Microcl ncentration of a test report a acking slip on ted's semicon ogy Incorpora ts provided by intract assemi oxic metals cc	nip f the it the outer iductor ated cannot y raw blers and	Doped GaAs	GaAs (mg) Total	1303-00-0  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified f a chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of rewinder of the chemical substance, if any, is not below the threshold of rewinding compounds used by Microchip meet the UL94 V0 flattp://ul.com/global/eng/pages/offerings/industries/chemical free protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information devices in their original packing materials is true and correquarantee the completeness and accuracy of data in this formaterial suppliers. Supplier information is often protected from material suppliers. Information is provided only as esting these estimates do not include trace levels of dopants, met Microchip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, and	via internal design controls nemical substance is NOT a date of this document, there gulatory concern for any relammability standard for pla lis/plastics/ in this form concerning stot to the best of its knowled irm because it has been corrom disclosure as trade seconates of the average weight tals, and non-metal material varranty, express or implied and its subsidiaries are con invoices.	02/95/EC (RoHS Directive), EU Directive 2011/65/EU ( , supplier declarations, and /or analytical test data.  n intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide.  stics. You can access the UL iQTM family of databas yl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technologies and belief, as of the date listed in this form. Micronpiled based on the ranges provided in Material Saferets and some information may not have been proviot these parts and the average weight of anticipated s contained within silicon devices (silicon IC) in the formation devices (silicon IC) in the formation of these parts and the average weight of anticipated s contained within silicon devices (silicon IC) in the formation in Microchip's standard terms and conditions that it is the substance of	and, to the beampurity consess to obtain a o hold the parts the parts and the parts are the parts ar	est of Microcl ncentration of a test report a acking slip on ted's semicon togy Incorpora ts provided by intract assemi oxic metals con exclusive, lim se are provide	nip f the  t the outer ductor ated cannot y raw blers and omponents. ited product ed in	Doped GaAs	GaAs (mg) Total	1303-00-0 Total Wire Bond 7440-57-5 Misc.	100 100.00 % of Total Weight 99.99	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified if a chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of reindolding compounds used by Microchip meet the UL94 V0 flittp://ul.com/global/eng/pages/offerings/industries/chemica/the protective "tubes" in which the specific product is ship lox and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information levices in their original packing materials is true and correct puarantee the completeness and accuracy of data in this for naterial suppliers. Supplier information is often protected from material suppliers. Supplier information is often protected from waterial suppliers. Information is provided only as estimates do not include trace levels of dopants, met Microchip Technology Incorporated does not provide any wararanties provided by Microchip Technology Incorporated	via internal design controls nemical substance is NOT a date of this document, there gulatory concern for any relammability standard for pla ls/plastics/ uped are made from polyving in in this form concerning sict to the best of its knowled orm because it has been corrom disclosure as trade seen ates of the average weight tals, and non-metal material varranty, express or implied and its subsidiaries are colinvoices.	ozy95/EC (RoHS Directive), EU Directive 2011/65/EU ( , supplier declarations, and /or analytical test data.  n intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidable gulatory scheme world-wide.  stics. You can access the UL iQTM family of databas yl chloride (PVC) plastic. "Window envelopes" used to substances restricted by RoHS in Microchip Technology and belief, as of the date listed in this form. Micronipiled based on the ranges provided in Material Safe rets and some information may not have been provide of these parts and the average weight of anticipated is contained within silicon devices (silicon IC) in the fill, with respect to the information provided in this declintained in Microchip's standard terms and conditions.  Declarations and shall not be liable for any damages.	and, to the beampurity cones to obtain a ohold the pagy Incorporate the page of the page o	est of Microcl ncentration of a test report a acking slip on ted's semicon ogy Incorpora ts provided by intract assemi oxic metals co- exclusive, lim se are provided direct, consec	nip f the  t the outer ductor sted cannot y raw blers and omponents.  iited product ed in quential or	Doped GaAs	GaAs  (mg) Total  Au  impurity	Total  Wire Bond  7440-57-5  Misc.  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 99.99 0.01	0.59

QX6E 06 XSON 10:41 AM : 5/6/2014

ICROCHIP				nation Base A pper Alloy (C	•		•	ogeneous Materials: .g. pc boards, display:	s)	JEDEC 97 Produc Marking and/or Pkg. Labeling e3
Semiconductor Devi	ce Type: QX8E 08 (Lead) X	* *								
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	8.14	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, fused	60676-86-0	Mold Compound	71.820	7.326	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			Total		
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	
Ag	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		Ag	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 <b>10.200</b>	12,500		2-Butoxyethyl acetate	112-07-2	2.50	
					1.000.000		Polymeric material	Trade secret	3	
	0.0102 g To				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0.77		Total	100.00 % of Total Weight	7.5
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ance with the above EU Directives has been verified	omply with EU Directive 2002/95/E	otal Mass C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data.	oHS Recast Di	rective) and w	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0.77 Doped GaAs	(mg) Total GaAs		100.00 % of Total Weight 100	7.5
we 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 chology incorporated's knowledge and belief as of the dunce, if any, is not below the threshold of regulatory cong compounds used by Microchip meet the UL94 V0 fix	omply with EU Directive 2002/95/Edvia internal design controls, suppli- temical substance is NOT an intent ate of this document, there is no concern for any regulatory scheme ammability standard for plastics. Y	otal Mass C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. ional ingredient in the semiconductor device an redible reason to believe that the unavoidable in world-wide.	oHS Recast Di	of Microchip	vith EU	Doped GaAs	(mg) Total GaAs	Total Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	
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 chology Incorporated's knowledge and belief as of the dince, if any, is not below the threshold of regulatory c g compounds used by Microchip meet the UL94 V0 fill.com/global/eng/pages/offerings/industries/chemical	omply with EU Directive 2002/95/Ei via internal design controls, suppli- temical substance is NOT an intent ate of this document, there is no concern for any regulatory scheme ammability standard for plastics. Y is/plastics/	otal Mass C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. cional ingredient in the semiconductor device an redible reason to believe that the unavoidable in world-wide. ou can access the UL iQTM family of databases	oHS Recast Di	of Microchip ntration of the	vith EU		(mg) Total  GaAs  (mg) Total	Total Chip (Die) 1303-00-0 Total Wire Bond	% of Total Weight	7.5
semiconductor device and its homogenous materials of tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Diance with the above EU Directives has been verified the medical substance is absent from the list above, the challogy Incorporated's knowledge and belief as of the dance, if any, is not below the threshold of regulatory of the compounds used by Microchip meet the UL94 V0 fix (ul.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.	omply with EU Directive 2002/95/Ei via internal design controls, suppli- temical substance is NOT an intent ate of this document, there is no concern for any regulatory scheme ammability standard for plastics. Y is/plastics/	otal Mass C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. cional ingredient in the semiconductor device an redible reason to believe that the unavoidable in world-wide. ou can access the UL iQTM family of databases	oHS Recast Di	of Microchip ntration of the	vith EU	Doped GaAs	(mg) Total GaAs	Total Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	% of Total Weight  100  100.00  % of Total Weight  100.00	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified the semical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the dance, if any, is not below the threshold of regulatory cong compounds used by Microchip meet the UL94 V0 fluul.com/global/eng/pages/offerings/industries/chemical rotective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.  The Technology Incorporated believes the information is in their original packing materials is true and correctives the completeness and accuracy of data in this four information is often protected from disclers. Information is provided only as estimates of the a	omply with EU Directive 2002/95/Ei via internal design controls, suppli- emical substance is NOT an intent ate of this document, there is no concern for any regulatory scheme ammability standard for plastics. Y is/plastics/ ped are made from polyvinyl chlori in in this form concerning substance to the best of its knowledge and im the cause it has been compiled b osure as trade secrets and some it verage weight of these parts and t	otal Mass C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data. ional ingredient in the semiconductor device an redible reason to believe that the unavoidable in world-wide. ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to es restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microch ased on the ranges provided in Material Safety information may not have been provided by sub he average weight of anticipated significant tox	oHS Recast Di d, to the best inpurity conce to obtain a te hold the pack in Technology Data Sheets p contract asse c metals com	of Microchip ntration of the est report at ing slip on the s semiconduc y incorporate crovided by ra- mblers and ra	e chemical e outer box ctor d cannot w material w material	Doped GaAs	(mg) Total  GaAs  (mg) Total	Total Chip (Die) 1303-00-0 Total Wire Bond	% of Total Weight  100  100.00  % of Total Weight	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). oliance with the above EU Directives has been verified in memical substance is absent from the list above, the changle of the desired substance is absent from the list above, the changle of the desired in the substance of the su	omply with EU Directive 2002/95/Ei via internal design controls, supplicemical substance is NOT an intent ate of this document, there is no concern for any regulatory scheme ammability standard for plastics. Y is/plastics/ ped are made from polyvinyl chloric in in this form concerning substance to the best of its knowledge and implementation of the best of its knowledge and implementation of the substance in the substance of the best of its substance in the substance of the best of its knowledge and implementation of the best of its substance in the substance of the best of its substance and the substance of the best of its substance and its substance of the best of its substance arranty, express or implied, with re and its substaliaries are contained	otal Mass C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data.  ional ingredient in the semiconductor device an redible reason to believe that the unavoidable in world-wide.  ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to le es restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microch ased on the ranges provided in Material Safety information may not have been provided by sub- the average weight of anticipated significant tox tithin silicon devices (silicon IC) in the finished p	oHS Recast Di d, to the best inpurity conce to obtain a te hold the pack lincorporated ip Technology Data Sheets p contract asse ic metals com arts. ation. The exc	of Microchip ntration of the est report at ing slip on the s semiconduc y incorporated rovided by ra- mblers and ra- uponents. The	e chemical couter box ctor d cannot w material w material se	Doped GaAs	(mg) Total  GaAs  (mg) Total  Gold	Total Chip (Die) 1303-00-0 Total Wire Bond 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100.00	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Iliance with the above EU Directives has been verified the semical substance is absent from the list above, the chology Incorporated's knowledge and belief as of the dance, if any, is not below the threshold of regulatory cong compounds used by Microchip meet the UL94 V0 fluul.com/global/eng/pages/offerings/industries/chemical rotective "tubes" in which the specific product is shipertain "reels" may be made from PVC plastic.  The Technology Incorporated believes the information is in their original packing materials is true and correctives. Supplier information is often protected from disclers. Information is provided only as estimates of the alates do not include trace levels of dopants, metals, and this Technology Incorporated does not provide any with the provided by Microchip Technology Incorporated the provided by Microchip Technology Incorporated the seminary in the provided by Microchip Technology Incorporated the provided provided by Microchip Technology Incorporated the provided by Microchip Technology Incorporated t	omply with EU Directive 2002/95/Ei via internal design controls, suppli- uemical substance is NOT an intent ate of this document, there is no ci- oncern for any regulatory scheme in ammability standard for plastics. Y is/plastics/ ped are made from polyvinyl chlori in in this form concerning substance it to the best of its knowledge and I im because it has been compiled b osure as trade secrets and some in inverage weight of these parts and t id non-metal materials contained wi arranty, express or implied, with re and its subsidiaries are contained invoices.  Changes to Material Content Declar- te users' reliance on the informatic	ortal Mass C (RoHS Directive), EU Directive 2011/65/EU (Ro er declarations, and /or analytical test data.  ional ingredient in the semiconductor device an redible reason to believe that the unavoidable in world-wide.  ou can access the UL iQTM family of databases de (PVC) plastic. "Window envelopes" used to le ser restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchased on the ranges provided in Material Safety information may not have been provided by sub- the average weight of anticipated significant tox ithin silicon devices (silicon IC) in the finished p respect to the information provided in this declar in Microchip's standard terms and conditions o	d, to the best purity conce to obtain a te mold the pack. Incorporated in Technology Data Sheets pontract asset c metals com arts. ation. The exc f sale. These direct or indirect or indi	of Microchip ntration of the est report at ing slip on the 's semiconduc y Incorporated rovided by ramblers and ra uponents. The	e chemical couter box dicannot w material w material se d product in	Doped GaAs	(mg) Total  GaAs  (mg) Total  Gold	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	% of Total Weight 100 100.00 % of Total Weight 100.00	0.2

QX8E 08 XSON 10:42 AM: 5/6/2014

MICROCHIP	Firmer VVQE 00 a	ead) X2SON 2x2x0.35mm (X8)		nination Base Copper Alloy	-		-	ogeneous Materials: e.g. pc boards, display	(s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: AAOE UO (Le									63
		"Contained In"	% Total			2.86	(mg) Total	Mold Compound	% ot Total Weight	51.99
Basic Substance	CAS Number	Sub-Component Sub-Component	Weight	mg/part	ppm			·		
Silica, fused	60676-86-0	Mold Compound	46.791	2.574	467,910		Silica, fused	60676-86-0	90.00	
Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	Mold Compound  Mold Compound	2.522 2.522	0.139 0.139	25,215 25,215		Epoxy Resin Phenolic Resin	Trade Secret	4.85 4.85	
Carbon Black	1333-86-4	Mold Compound  Mold Compound	0.156	0.139	1,560	1	Carbon Black	Trade Secret 1333-86-4	4.85 0.30	
Copper	7440-50-8	Lead Frame	38.649	2.126	386,488	1	Calbull black	Total		
Nickel	7440-02-0	Lead Frame	1.031	0.057	10,307	2.23	(mg) Total	Lead Frame	% of Total Weight	40.58
Silicon	7440-02-0	Lead Frame	0.183	0.010	1,826	2.23	Copper	7440-50-8	95.24	40.56
Magnesium	7439-95-4	Lead Frame	0.163	0.010	406	1	Nickel	7440-50-8	95.24 2.54	
Silver	7440-22-4	Lead Frame	0.677	0.002	6,773	1	Silicon	7440-02-0	0.45	
Silver	7440-22-4	Die Attach	1.888	0.104	18,880	1	Magnesium	7439-95-4	0.43	
Epoxy Resin	Trade secret	Die Attach	0.472	0.026	4,720	1	Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.360	0.130	23,600	1		Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.720	0.040	7,200	0.13	(mg) Total	Die Attach	% of Total Weight	2.36
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.990	0.109	19,900	0.10	Silver	7440-22-4	80.00	2.00
1111	7440 01 0	TOTALS:	100.000	5.500	1.000.000	1	Epoxy Resin	Trade secret	20.00	
	0.0055	Total Mass			.,,		Epoxy recom	Total		ļ
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)		, , ,	,	Recast Direc	tive) and with	0.13 Doped GaAs	(mg) Total  Gallium arsenide	Chip (Die) 1303-00-0	% of Total Weight	2.36
J Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), ompliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the chen echnology Incorporated's knowledge and belief as of the date	internal design controls, nical substance is NOT are of this document, there	supplier declarations, and /or analytical test n intentional ingredient in the semiconductor is no credible reason to believe that the una	data. device and,	to the best of	Microchip				100	2.36
J Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), ompliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the chen be chnology incorporated's knowledge and belief as of the date incident substance, if any, is not below the threshold of reguloiding compounds used by Microchip meet the UL94 V0 flam.	internal design controls, nical substance is NOT ar e of this document, there atory concern for any reg mability standard for plas	supplier declarations, and /or analytical test n intentional ingredient in the semiconductor is no credible reason to believe that the una julatory scheme world-wide.	data. device and, voidable impo	to the best of urity concentr	Microchip ation of the			1303-00-0	100	0.72
nis semiconductor device and its homogenous materials con J Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the chen echnology Incorporated's knowledge and belief as of the dat- ternical substance, if any, is not below the threshold of regul lolding compounds used by Microchip meet the UL94 V0 flam tp://ul.com/global/eng/pages/offerings/industries/chemicals/, ne protective "tubes" in which the specific product is shippe- ter box and certain "reels" may be made from PVC plastic.	internal design controls, nical substance is NOT ar e of this document, there atory concern for any reg mability standard for plas plastics/	supplier declarations, and /or analytical test in intentional ingredient in the semiconductor is no credible reason to believe that the una- julatory scheme world-wide. stics. You can access the UL iQTM family of o	data. device and, to device and, to device and, to device and, to device and to device	to the best of urity concentr obtain a test i	Microchip ation of the report at	Doped GaAs	Gallium arsenide	1303-00-0  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
J Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), ompliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the chen echnology Incorporated's knowledge and belief as of the datuemical substance, if any, is not below the threshold of regul olding compounds used by Microchip meet the UL94 V0 flamtp://ul.com/global/eng/pages/offerings/industries/chemicals/ine protective "tubes" in which the specific product is shipped.	internal design controls, nical substance is NOT are of this document, there atory concern for any reg mability standard for plasolastics/ If are made from polyviny at this form concerning sue the best of its knowledgis form because it has befrom disclosure as trade I only as estimates of the	supplier declarations, and /or analytical test in intentional ingredient in the semiconductor is no credible reason to believe that the unargulatory scheme world-wide.  stics. You can access the UL iQTM family of or chloride (PVC) plastic. "Window envelopes' abstances restricted by RoHS in Microchip Tege and belief, as of the date listed in this formen compiled based on the ranges provided is secrets and some information may not have average weight of these parts and the avera	data. device and, voidable impletatabases to rused to hold chnology Inc. Microchip In Material Sa been provide ge weight of	to the best of urity concentr obtain a test of the packing corporated's see Technology Infety Data She of by subcont anticipated si	Microchip ation of the report at slip on the semiconductor corporated ets provided by rract gnificant toxic	Doped GaAs  0.04	Gallium arsenide	1303-00-0 Total Wire Bond	100 100.00 % of Total Weight	
J Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regul olding compounds used by Microchip meet the UL94 V0 flam tp://ul.com/global/eng/pages/offerings/industries/chemicals/, the protective "tubes" in which the specific product is shippenter box and certain "reels" may be made from PVC plastic. Icrochip Technology Incorporated believes the information in exices in their original packing materials is true and correct the unant guarantee the completeness and accuracy of data in the waterial suppliers. Supplier information is often protected issemblers and raw material suppliers. Information is provided semblers and raw material suppliers. Information is provided.	internal design controls, nical substance is NOT are of this document, there atory concern for any reg mability standard for plasolastics/ d are made from polyviny this form concerning supported to the best of its knowledgis form because it has be from disclosure as trade only as estimates of the ls of dopants, metals, and anty, express or implied, rated and its subsidiaries	supplier declarations, and /or analytical test in intentional ingredient in the semiconductor is no credible reason to believe that the unarquiatory scheme world-wide.  stics. You can access the UL iQTM family of or chloride (PVC) plastic. "Window envelopes' obstances restricted by RoHS in Microchip Tege and belief, as of the date listed in this formen compiled based on the ranges provided is secrets and some information may not have average weight of these parts and the averad non-metal materials contained within silico with respect to the information provided in the second contained within silico with respect to the information provided in the second contained within silico with respect to the information provided in the second contained within silico with respect to the information provided in the second contained within silico with respect to the information provided in the second contained within silico with respect to the information provided in the second contained within silico with respect to the information provided in the second contained within silico with respect to the information provided in the second contained within silico.	data.  device and, voldable impleted at the least to least to hold chnology Inc.  Microchip In Material Sabeen provide ge weight of n devices (silinis declaration)	to the best of urity concentro obtain a test of the packing corporated's selection of the packing the packing the packing of t	Microchip ation of the report at slip on the semiconductor corporated ets provided by ract gnificant toxic finished parts. sive, limited	Doped GaAs  0.04	Gallium arsenide	1303-00-0  Total  Wire Bond  7440-57-5	100 100.00 % of Total Weight	
J Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) ompliance with the above EU Directives has been verified via a chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regul olding compounds used by Microchip meet the UL94 V0 flamt tp://ul.com/global/eng/pages/offerings/industries/chemicals/get product is shipped the protective "tubes" in which the specific product is shipped the protective "tubes" in which the specific product is shipped the protective "tubes" in which the specific product is shipped the protective "tubes" in which the specific product is shipped the protection of th	internal design controls, nical substance is NOT are of this document, there atory concern for any reg mability standard for plasolastics/ d are made from polyviny at this form concerning sue to the best of its knowledgis form because it has befrom disclosure as trade of only as estimates of the ls of dopants, metals, and anty, express or implied, rated and its subsidiaries aret, and invoices.  Inges to Material Content te users' reliance on the i	supplier declarations, and /or analytical test in intentional ingredient in the semiconductor is no credible reason to believe that the unarquiatory scheme world-wide.  stics. You can access the UL iQTM family of or continuous cont	data.  device and, voidable impleted at the control of the control	to the best of urity concentr obtain a test of the packing corporated's seed by subcont anticipated silicon IC) in the cons. The exclusions of sale. Test or indirect,	Microchip ation of the report at slip on the remiconductor corporated ets provided by react gnificant toxic e finished parts. sive, limited hese are consequential	Doped GaAs  0.04	Gallium arsenide  (mg) Total  Doped Gold	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 100.00	0.72

XX8E 08 X2SON 10:42 AM : 5/6/2014

MICROCHIP  Semiconductor Device 1	Гуре: TL 36 (Lead)	VTLA 5x5x0.9mm (7S)		nation Base A oper Alloy (Co	•			ogeneous Materials: .g. pc boards, displays	)	JEDEC 97 Product Marking and/or Pkg. Labeling e4
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	117.71	(mg) Total	Mold Compound	% ot Total Weight	79.8
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	Trade Secret	Mold Compound	4.788	7.062	47,880		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.353	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.217	15.069	102,165			Total	100.00	
Iron	7439-89-6	Lead Frame	0.242	0.356	2,415	15.49	(mg) Total	Lead Frame	% of Total Weight	10.5
Phosphorous	7723-14-0	Lead Frame	0.026	0.039	263		Copper	7440-50-8	97.30	
Zinc (Metal)	7440-44-0	Lead Frame	0.016	0.023	158		Iron	7439-89-6	2.30	
Silver (Ag)	7440-22-4	Die Attach	0.589	0.868	5,888		Phosphorous	7723-14-0	0.25	
Proprietary Resin	Trade Secret	Die Attach	0.139	0.205	1,388		Zinc (Metal)	7440-44-0	0.15	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.033	225			Total	100.00	
Silicon	7440-21-3	Chip (Die)	7.500	11.063	75,000	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	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125	1.659	11,250		Proprietary Resin	Trade Secret	19	
Palladium	7440-05-03	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.092	625	Proprietar	y Curing agent & Hardener	Trade Secret	3	
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.092	625	. ropriotai	y carring agont a maraonor	Total	100.00	
0010	1110010	TOTALS:	100.000	147.500	1,000,000	11.06	Total (mg)	Chip (Die)	% of Total Weight	7.5
	0.4.475				.,000,000	11.00				7.0
		g Total Mass 002/95/EC (RoHS Directive), EU Directive 2011/65	i/EU (RoHS Red	ast Directive)	and with EU		Doped Silicon	7440-21-3 <b>Total</b>	100 <b>100.00</b>	
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65	•	cast Directive)	and with EU	0.30	(mg) Total			0.2
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 cher chnology Incorporated's knowledge and belief as of the dat	mply with EU Directive 2 a internal design control mical substance is NOT te of this document, then	on 2002/95/EC (RoHS Directive), EU Directive 2011/65 is, supplier declarations, and /or analytical test do an intentional ingredient in the semiconductor do is no credible reason to believe that the unavo	ata. evice and, to th	e best of Micro	ochip	0.30		Total	100.00	0.2
is semiconductor device and its homogenous materials col rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via chemical substance is absent from the list above, the chen chnology incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of reguiveling compounds used by Microchip meet the UL94 V0 flanp://ul.com/global/eng/pages/offerings/industries/chemicals.	mply with EU Directive 2 a internal design control mical substance is NOT te of this document, ther llatory concern for any re	on 202/95/EC (RoHS Directive), EU Directive 2011/65 is, supplier declarations, and /or analytical test do an intentional ingredient in the semiconductor do it is no credible reason to believe that the unavougulatory scheme world-wide.	ata. evice and, to th idable impurity	e best of Micro	ochip of the	0.30	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.2
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via  Inchemical substance is absent from the list above, the cher  Inchnology incorporated's knowledge and belief as of the dat  Inchnology incorporated is nowledge and belief as of the dat  Inchnology incorporated is nowledge and belief as of the dat  Inchnology incorporated is nowledge and belief as of the dat  Inchnology incorporated is nowledge and belief as of the dat  Inchnology i	a internal design control mical substance is NOT te of this document, the latory concern for any ro mmability standard for pl /plastics/	on 202/95/EC (RoHS Directive), EU Directive 2011/65 is, supplier declarations, and /or analytical test do an intentional ingredient in the semiconductor do it is no credible reason to believe that the unavougulatory scheme world-wide.  astics. You can access the UL iQTM family of da	ata.  evice and, to th idable impurity tabases to obta	e best of Micro concentration lin a test repor	ochip of the t at	0.30	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight	0.2
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Impliance with the above EU Directives has been verified via the chemical substance is absent from the list above, the cheichnology Incorporated's knowledge and belief as of the date emical substance, if any, is not below the threshold of reguipling compounds used by Microchip meet the UL94 V0 flantp://ul.com/global/eng/pages/offerings/industries/chemicals/ee protective "tubes" in which the specific product is shippe	a internal design control mical substance is NOT te of this document, the latory concern for any re mability standard for pl plastics/ ed are made from polyvie in this form concerning to the best of its knowle his form because it has I from disclosure as tract timates of the average v	ouz/95/EC (RoHS Directive), EU Directive 2011/65 is, supplier declarations, and /or analytical test dan intentional ingredient in the semiconductor dre is no credible reason to believe that the unavous egulatory scheme world-wide.  astics. You can access the UL iQTM family of dannyl chloride (PVC) plastic. "Window envelopes" under the complete of the date listed in this form. I been compiled based on the ranges provided in the secrets and some information may not have by reight of these parts and the average weight of a	ata.  evice and, to th idable impurity tabases to obta  esed to hold the annology Incorpo Microchip Tech Material Safety en provided by nticipated signi	e best of Micro concentration in a test repor packing slip of prated's semic nology Incorpo Data Sheets p y subcontract :	ochip of the  t at  on the outer  onductor orated rovided by assemblers etals		(mg) Total  Doped Gold	Total Wire Bond 7440-57-5  Total  Plating on external leads (pins) / annealed at 150°C	100.00 % of Total Weight 100 100.00	
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TL 36 VTLA 10:42 AM : 5/6/2014

Basic Substance  CAS Number  Subcomponent  Weight mg/part ppm  Silica, vitrous (pr lusted)  GO076-86-0  Mold Compound  GP 830  From Read  From	ICROCHIP Semiconductor Device Ty	/pe: TL 44 (Lead	) VTLA 6x6x0.9mm (6S)		nation Base A oper Alloy (Co	•		•	nogeneous Materials: e.g. pc boards, displays	)	JEDEC 97 Product Marking and/or Pkg. Labeling e4
Silica, vireous for fused   60976-86-0   Most Compound   67,830   120,398   678,300   February   120,398			"Contained In"		malnart	nnm	141.65	(mg) Total	Mold Compound	% ot Total Weight	79.8
Epoxy Resin Trade Secret Mold Compound 4.788 8.4949 47.880 Cation Black 133.5464 Mold Compound 4.788 8.4949 1.4780 Cation Black 133.5464 Mold Compound 4.788 8.4949 1.4780 Cation Black 133.5464 Mold Compound 4.7880 Cation Black 133.5464 Mold Compound 4.7880 Cation Black 133.5464 Mold								Cilian vitanava (as fuesal)	00070 00 0	05.00	
Přemoic Rean   Trade Sezret   Mold Compound   4.788   8.499   4.7880   Carbon Black   1333.864   30   Carbon Black   30   Carb											
Cation Black 1333-86-4 Mold Compound 0.239 0.425 2.394 Copper 7440-50-8 Lead Frame 10.217 81-814 102.165 Total 100.00 lnn 7439-89-6 Lead Frame 0.242 0.429 2.415 18.44 (mg) Total Lead Frame 9.242 0.429 18.44 (mg) Total Lead Frame 9.242 0.429 18.44 (mg) Total Lead Frame 9.242 18.44 (mg) Total Lead F											
Copper   7440-50-8   Lead Frame   10.217   18.134   102.165											
Final   Prosphorous   7723-14-0   Lead Frame   0.076   0.077   263								Carbon Black			
Phosphorous							40.04	(mm) Total			10.5
Silver (Ag)   7440-22-4   Die Attach   O.598   1.58   Silver (Ag)   7440-22-4   Die Attach   O.599   1.045   5.882   Phosphorous   7723-140   O.25   Zime (Metal)   7440-440   O.599							10.04				10.5
Silver (Ag) 17440-22-4 Die Attach 0.159 0.289 1.045 5.588 Propretary Resin 1746 Secret 1 Die Attach 0.139 0.248 1.388 Propretary Curing agent & Hardener 1746-46-67-5 Page 1.00-200 1.00-23 0.040 2.25 Total Mass 100-200 1.00-200 1.00-25 1.00-200 1.00-200 1.00-25 1.00-200 1.00-25 1.00-200 1.00-25 1.00-200 1.00-25 1.00-200 1.00-25 1.00-200 1.00-25 1.00-200 1.00-25 1.00-200 1.00-200 1.00-25 1.00-200 1.00-2											
Proprietary Kesin Trade Secret Die Attach 0.139 0.248 1,388 Proprietary Curing apent 8 Hardener Trade Secret Die Attach 0.023 0.400 225 Gold 7440-27-3 Chip (Die) 7.500 13.313 75.000 1.33 (mg) Total Die Attach % of Total Weight Palladium 7440-07-5 Wire Bond 0.200 0.355 2,000 Palladium 7440-07-5 Planty on external lasks (prest) are secret lasks (											
Proprietary Curing agent & Hardener    Trade Secret   Die Attach   Die											
Silcon   7440-57-3   Chip (Dip   7-500   13.313   75,000   1.33   (mg) Total   Die Attach   % of Total Weight   7-440-57-5   Nickel   7-440-57-5   Pilantiqu network late (prey) arrenated at 1970 for 1 hour   1.125   1.997   11.250   Proprietary Repin   Trade Secret   19   Proprietary Curing agent & Hardener   Trade Secret   19   Proprietary Repin   Trade Secret   19   Proprietary Curing agent & Hardener   Trade Secret   19   Proprietary Repin   Trade Secret   19   Proprietary Curing agent & Hardener   Trade Secret								Zinc (Metal)			
Gold 1440-67-5   Wire Bond   1240-02-0   Pates on esternal table (pring) arreaded at 150°C for 1 hour   1.125   1.999   11,250	Proprietary Curing agent & Hardener	Trade Secret	Die Attach					•	Total	100.00	
Nickel 7440-02-0 Plating on external leads (print) / arrenaled at 150°C for 1 hour 0.063 0.111 625 and 140-05-13 Plating on external leads (print) / arrenaled at 150°C for 1 hour 0.063 0.111 625 and 140-05-13 Plating on external leads (print) / arrenaled at 150°C for 1 hour 0.063 0.111 625 and 140-05-13 Plating on external leads (print) / arrenaled at 150°C for 1 hour 0.063 0.111 625 and 140-05-13 plating on external leads (print) / arrenaled at 150°C for 1 hour 0.063 0.111 625 and 140-05-13 0.000 0	Silicon	7440-21-3	Chip (Die)	7.500	13.313	75,000	1.33	(mg) Total	Die Attach	% of Total Weight	0.75
Palladium 7440-05-03 Plasting on external leads (prins) / annealed at 150°C for 1 hour 0.063 0.111 6.25 Gold 7440-57-5 Plasting on external leads (prins) / annealed at 150°C for 1 hour 10.063 0.111 6.25 Total (mg) 2.55 Tot	Gold	7440-57-5	Wire Bond	0.200	0.355	2.000		Silver (Ag)	7440-22-4	79	
Palladium 7440-05-03 Putargo nesement leads (peral / amenated at 150°C for 1 hour 0.063 0.111 6.25 Gold 7440-57-5 Pitargo nesement leads (peral / amenated at 150°C for 1 hour 1.00.63 0.111 6.25 Total (mg) 7440-01-3 Total (mg) 1.000,000	Nickel	7440-02-0	Plating on external leads (pins) / appealed at 150°C for 1 hour	1 125	1 997	11 250		Proprietary Resin	Trade Secret	19	
Gold  7440-57-5  Puting on external leads (prec) / arrecaled at 150°C for 1 hour  75TALS:  75							Proprietar				
O.1775 g Total Mass  TOTALS: 100.000 177.500 1,000,000 Doped Silcon 7440-21-3 100  Doped Silcon 7440-21-3 100  Doped Silcon 7440-21-3 100  Doped Silcon 7440-21-3 100  Total 100,000 Proposed Silcon 1							Trophictal	y during agent a maracher		-	
O.1775 g Total Mass    Doped Silicon   7440-21-3   100.00	Oolu	1440-31-3					10.01	T-(-1()			7.5
emiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive).  Identify the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Identify the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Identify the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Identify the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Identify the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.  Identify the above EU Directives has been verified via internal design controls, supplier into materials ubstance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip design of the unavoidable impurity concentration of the call substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  Identify the properties of the lower than the semiconductor device and, to the best of Microchip design of the unavoidable impurity concentration of the call substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  Identify the properties of the semiconductor of the unavoidable impurity concentration of the call substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.  Identify the properties of the semiconductor of the unavoidable impurity concentration of the call substance is a semiconductor of the unavoidable impurity concentration of the unavoidable impurity con				100.000	177.500	1,000,000	13.31				7.5
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.  0.36 (mg) Total Wire Bond % of Total Weight period of the above, the chemical substance is NoT an intentional ingredient in the semiconductor device and, to the best of Microchip peoply 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 also understands as understand the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the also understands and the unavoidable impurity concentration of the understands and the unavoidable impurity											
Doped Gold 7440-57-5 100  Doped Gold 7440-57	ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/69	·	cast Directive)	and with EU		7, 22 2 2	Total	100.00	
//ul.com/global/eng/pages/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 and certain "reels" may be made from PVC plastic.    Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour   Plating on external leads (pins) / annealed at 150°C for 1 hour	ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/69	·	cast Directive)	and with EU	0.36	7, 22 2 2	Total	100.00	0.2
to certain "reels" may be made from PVC plastic. "window envelopes used to noid the packing slip on the outer of discretine "reels" may be made from PVC plastic. "(pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour " % of Total Weight of the certain "reels" may be made from PVC plastic. "(mg) Total (pins) / annealed at 150°C for 1 hour	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 chem ology Incorporated's knowledge and belief as of the date	ply with EU Directive 2 internal design contro ical substance is NOT of this document, the	on 2002/95/EC (RoHS Directive), EU Directive 2011/69 states to the supplier declarations, and /or analytical test do an intentional ingredient in the semiconductor do re is no credible reason to believe that the unavo	ata. evice and, to th	ne best of Micro	ochip	0.36	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.2
and certain "reels" may be made from PVC plastic.  2.22 (mg) I otal (pins)/ annealed at 150°C for 1 hour working rechnology incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology incorporated or guarantee the 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 naterial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers are material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals becoments. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.  Society Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited suct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are	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 chem lology Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regula  ng compounds used by Microchip meet the UL94 V0 flami	ply with EU Directive 2 internal design contro ical substance is NOT of this document, the tory concern for any r nability standard for p	on 20295/EC (RoHS Directive), EU Directive 2011/6:  Is, supplier declarations, and /or analytical test d  an intentional ingredient in the semiconductor d  re is no credible reason to believe that the unavo  egulatory scheme world-wide.	ata. evice and, to th idable impurity	ne best of Micro	ochip n of the	0.36	(mg) Total	Total Wire Bond 7440-57-5	% of Total Weight	0.2
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 by transparent to the 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 naterial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers aw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals onents. These estimates 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 and terms and conditions of sale. These are  Palladium  7440-05-3  5.00	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 chem lology Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regula ig compounds used by Microchip meet the UL94 V0 flams ul.com/global/eng/pages/offerings/industries/chemicals/p	ply with EU Directive 2 internal design contro ical substance is NOT of this document, the tory concern for any r nability standard for p lastics/	on 20295/EC (RoHS Directive), EU Directive 2011/6:  Is, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of the is no credible reason to believe that the unavous egulatory scheme world-wide.  It is no can access the UL iqTM family of data	ata. evice and, to thidable impurity	ne best of Micro concentration	ochip n of the rt at		(mg) Total  Doped Gold	Total  Wire Bond  7440-57-5  Total  Plating on external leads	100.00 % of Total Weight 100	
act warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are Palladium 7440-05-3 5.00	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 chem lology Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flam lul.com/global/eng/pages/offerings/industries/chemicals/p rotective "tubes" in which the specific product is shipped	ply with EU Directive 2 internal design contro ical substance is NOT of this document, the tory concern for any r nability standard for p lastics/	on 20295/EC (RoHS Directive), EU Directive 2011/6:  Is, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of the is no credible reason to believe that the unavous egulatory scheme world-wide.  It is no can access the UL iqTM family of data	ata. evice and, to thidable impurity	ne best of Micro concentration	ochip n of the rt at		(mg) Total  Doped Gold	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) / annealed at 150°C	100.00 % of Total Weight 100	0.2
	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 chem loogy Incorporated's knowledge and belief as of the date cal substance, if any, is not below the threshold of regula ng compounds used by Microchip meet the UL94 V0 flamm ul.com/global/eng/pages/offerings/industries/chemicals/p rotective "tubes" in which the specific product is shipped nd certain "reels" may be made from PVC plastic. chip Technology Incorporated believes the information in les in their original packing materials is true and correct to t guarantee the completeness and accuracy of data in thi aterial suppliers. Supplier information is often protected in twe material suppliers. Information is provided only as esti-	ply with EU Directive 2 internal design contro ical substance is NOT of this document, thei tory concern for any r nability standard for p lastics/ are made from polyvin this form concerning: the best of its knowle s form because it has from disclosure as trace mates of the average v	Journal of the series of the date listed in this form. I been compiled based on the ranges provided in the serviced and belief, as of the date listed in the serviced in this form. I been compiled based on the ranges provided in the secrets and some information may not have be veight of these parts and the average weight of a supplied based on the average weight of a servers and some information may not have be veight of these parts and the average weight of a serviced in the average and a serviced in the average	ata.  evice and, to the idable impurity tabases to obtain the idable impurity tabases to obtain the idable impurity incomposed in the idable i	ne best of Micro concentration ain a test report e packing slip orated's semic mology Incorp Data Sheets p y subcontract ifficant toxic m	ochip n of the rt at on the outer conductor orated orovided by assemblers letals		(mg) Total  Doped Gold  (mg) Total	Total Wire Bond  7440-57-5  Total  Plating on external leads (pins) / annealed at 150°C for 1 hour	100.00 % of Total Weight 100 100.00 % of Total Weight	
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 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  Gold 7440-57-5 5.00  Tts (SGS) or of this Certificate of Compliance for semiconductor products.	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 chem  loogy Incorporated's knowledge and belief as of the date  cal substance, if any, is not below the threshold of regula  ng compounds used by Microchip meet the UL94 V0 flamm  lu.com/global/eng/pages/offerings/industries/chemicals/p  rotective "tubes" in which the specific product is shipped  nd certain "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information in  es in their original packing materials is true and correct to  t guarantee the completeness and accuracy of data in thi  aterial suppliers. Supplier information is often protected to  the material suppliers. Information is provided only as esti- connents. These estimates do not include trace levels of do  chip Technology Incorporated does not provide any warract  warranties provided by Microchip Technology Incorporated  to warranties provided by Microchip Technology Incorporated  to the standard  to be the setting the suppliers of the standard  to be the suppliers of the suppliers  to be the suppliers  t	ply with EU Directive 2 internal design contro ical substance is NOT of this document, the itory concern for any r mability standard for p lastics/ are made from polyvii this form concerning: the best of its knowle s form because it has rom disclosure as trac mates of the average v pants, metals, and non anty, express or implie tated and its subsidiari	Journal of the service of the servic	ata.  evice and, to the idable impurity tabases to obtain the idable impurity tabases to obtain the idable impurity in the idable in the idabl	ne best of Microconcentration ain a test report e packing slip orated's semicanology Incorp Data Sheets p y subcontract ifficant toxic m the finished pa	ochip n of the rt at on the outer conductor lorated provided by assemblers letals arts.		(mg) Total  Doped Gold  (mg) Total	Total Wire Bond  7440-57-5  Total  Plating on external leads (pins) / annealed at 150°C for 1 hour  7440-02-0	100.00 % of Total Weight 100 100.00 % of Total Weight	
	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 chem  tology Incorporated's knowledge and belief as of the date  cal substance, if any, is not below the threshold of regula  ng compounds used by Microchip meet the UL94 V0 flamm  ul.com/global/eng/pages/offerings/industries/chemicals/protective "tubes" in which the specific product is shipped  nd certain "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information in  se in their original packing materials is true and correct to  the quarantee the completeness and accuracy of data in thi  aterial suppliers. Supplier information is often protected  inv material suppliers. Information is provided only as esti- onents. These estimates do not include trace levels of do,  chip Technology Incorporated does not provide any warra  ct warranties provided by Microchip Technology Incorporated  does not provide any warra  ct warranties provided by Microchip Technology Incorporated  does not provide any warra  ct warranties provided by Microchip Technology Incorporated  chip disclaims any duty to notify users of updates or char  erwise, suffered by users or third parties as a result of the  erwise, suffered by users or third parties as a result of the  erwise, suffered by users or third parties as a result of the  erwise, suffered by users or third parties as a result of the  erwise is the substance  erwise is t	ply with EU Directive 2 internal design contro ical substance is NOT of this document, thei tory concern for any r mability standard for p lastics/ are made from polyvi this form concerning the best of its knowle s form because it has rom disclosure as trace mates of the average w pants, metals, and non anty, express or implie ated and its subsidiari ent, and invoices. uges to Material Contel e users' reliance on the	Journal of the service of the servic	ata.  evice and, to the idable impurity tabases to obtained to hold the impurity of the idable impurity in the idable impurity in the idable i	ne best of Micro concentration ain a test report e packing slip orated's semic mology Incorp Data Sheets p y subcontract ificant toxic m the finished pa The exclusive, of sale. These	ochip n of the rt at on the outer conductor iorated y assemblers tetals arts. limited a are		(mg) Total  Doped Gold  (mg) Total  Nickel	Total Wire Bond  7440-57-5  Total  Plating on external leads (pins) / annealed at 150°C for 1 hour  7440-02-0	100.00 % of Total Weight 100 100.00 % of Total Weight 90.00	

TL 44 VTLA 10:43 AM : 5/6/2014

100.000

MICROCHIP  Semiconductor Device Type	: <b>TL 124</b> (Le	ad) VTLA 9x9x0.9mm (8S)		ation Base A oper Alloy (Cu	,		•	ogeneous Materials: .g. pc boards, displays)		JEDEC 97 Product Marking and/or Pkg. Labeling e4
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	141.65	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	120,398	678,300		Silica, vitreous (or fused)	60676-86-0	85.00	1
Epoxy Resin	Trade Secret	Mold Compound	6.943	120.396	69,426		Epoxy Resin	Trade Secret	85.00	•
Phenolic Resin	Trade Secret	Mold Compound	4.788	8,499	47.880		Phenolic Resin	Trade Secret	6.00	1
Carbon Black	1333-86-4	Mold Compound	0.239	0.425	2,394		Carbon Black	1333-86-4	0.30	1
Copper	7440-50-8	Lead Frame	10,217	18.134	102,165		- Carbon Black	Total	100.00	<u>4</u> 1
Iron	7439-89-6	Lead Frame	0.242	0.429	2,415	18.64	(mg) Total	Lead Frame	% of Total Weight	
Phosphorous	7723-14-0	Lead Frame	0.026	0.047	263	10.01	Copper	7440-50-8	97.30	1
Zinc (Metal)	7440-44-0	Lead Frame	0.016	0.028	158		Iron	7439-89-6	2.30	
Silver (Ag)	7440-22-4	Die Attach	0.589	1.045	5.888		Phosphorous	7723-14-0	0.25	1
Proprietary Resin	Trade Secret	Die Attach	0.139	0.246	1,388		Zinc (Metal)	7440-44-0	0.15	1
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.040	225			Total	100.00	<u> </u>
Silicon	7440-21-3	Chip (Die)	7.500	13.313	75,000	1.33	(mg) Total	Die Attach	% of Total Weight	
Gold	7440-57-5	Wire Bond	0.200	0.355	2,000	1.00	Silver (Ag)	7440-22-4	79	1 0.75
Nickel	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125	1.997	11.250		Proprietary Resin	Trade Secret	19	1
Palladium	7440-02-0	Plating on external leads (pins) / annealed at 150 C for 1 hour	0.063	0.111	625	Proprieto	ry Curing agent & Hardener	Trade Secret	3	1
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150 °C for 1 hour	0.063	0.111	625	Fioplieta	ly Culling agent & Hardener	Total	100.00	4
Gold	7440-37-3	TOTALS:	100.000	177,500	1.000.000	13.31	Total (mg)	Chip (Die)	% of Total Weight	
	0.4775		100.000	177.500	1,000,000	13.31				7.5
This semiconductor device and its homogenous materials comply		g Total Mass					Doped Silicon	7440-21-3 Total	100 100.00	<u>]</u>
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	•			est of Microcl	nip	0.36	(mg) Total	Wire Bond	% of Total Weight	0.2
Technology Incorporated's knowledge and belief as of the date of the chemical substance, if any, is not below the threshold of regulatory	concern for any r	egulatory scheme world-wide.					Doped Gold	7440-57-5	100	ļ
Molding compounds used by Microchip meet the UL94 V0 flammab http://ul.com/global/eng/pages/offerings/industries/chemicals/plasti		lastics. You can access the UL IQIM family of data	bases to obtain	a test report a	it			rotar	100.00	
The protective "tubes" in which the specific product is shipped are box and certain "reels" may be made from PVC plastic.	made from polyvi	nyl chloride (PVC) plastic. "Window envelopes" us	ed to hold the p	acking slip on	the outer	2.22	(mg) Total	Plating on external leads (pins) / annealed at 150°C for 1 hour	% of Total Weigh	t 1.25
Microchip Technology Incorporated believes the information in this devices in their original packing materials is true and correct to the guarantee the completeness and accuracy of data in this form beca material suppliers. Supplier information is often protected from disraw material suppliers. Information is provided only as estimates of These estimates do not include trace levels of dopants, metals, and	best of its knowle use it has been co closure as trade so the average weig	dge and belief, as of the date listed in this form. Mi mpiled based on the ranges provided in Material S screts and some information may not have been pr ht of these parts and the average weight of anticip.	crochip Techno afety Data Shee ovided by subc ated significant	logy Incorpora ts provided by ontract assem toxic metals c	ated cannot raw blers and		Nickel	7440-02-0	90.00	
Microchip Technology Incorporated does not provide any warranty, warranties provided by Microchip Technology Incorporated and its Microchip's quotations, sales order acknowledgement, and invoice:	subsidiaries are c						Palladium	7440-05-3	5.00	
Microchip disclaims any duty to notify users of updates or changes	to Material Conta	nt Declarations and shall not be liable for any dom								1

TL 124 VTLA 10:43 AM : 5/6/2014

177.500

MICROCHIP  Semiconductor Device Type:	R1KF /8 T	FRGA avoid aver (II)		ination Base opper Alloy (	,		Package Homog 8.1 Electronics (e.g.	eneous Materials: pc boards, displays	;)	JEDEC 97 Product Marking and/or Pkg. Labeling e1
Semiconductor Device Type:	DIKE 40 I	"Contained In"	% I otal							
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	
GH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4.905	6.984	49,048		HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY	Trade Secret	9.75	
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.258	1.791	12,580		PHENOL RESIN 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	100.00	
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 7631-86-9	Lead Frame Lead Frame	4.800 1.794	6.835 2.555	48,000 17,944		Copper Glass fibers	7440-50-8 65997-17-3	35.90 21.40	
Silica, chemically prepared	7631-86-9	Lead Frame	1.794	2.555	17,944		Phenol, formaldehyde.	65997-17-3	21.40	
Nickel	7440-02-0	Lead Frame	0.875	1.246	8,748		(chloromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.561	0.799	5,608		Silica, chemically	7631-86-9	8.00	
Magnesium silicate	14807-96-6	Lead Frame	0.449	0.639	4,486		prepared Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.449	0.639	4,486		Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.179	0.256	1,794		Magnesium silicate	14807-96-6	2.00	
Misc.	system	Lead Frame	0.336	0.479	3,365		Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.112	0.160	1,122		(2- Methoxymethylethoxy)pro	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 Total	0.10 <b>100.00</b>	
Silicon Doped Gold	7440-21-3 7440-57-5	Chip (Die) Wire Bond	7.650 0.860	10.894 1.225	76,500 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	0.50	Silver	7440-22-4	80.00	0.09
Silver	7440-22-4	Plating on external leads (pins)	0.723	1.029	7,228		Basic Duromer:Phenolic resin (Compound of			
Copper	7440-50-8	Plating on external leads (pins)	0.090	0.129	904		polymeric network)	26834-02-6 Total	20.00 <b>100.00</b>	
соррсі	1440 00 0	TOTALS		142.400	1,000,000	10.89	(mg) Total	Chip (Die)	% of Total Weight	7.65
	0 1424 c	Total Mass	•		,,		Doped Silicon	7440-21-3	100	
is semiconductor device and its homogenous materials comply with rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	EU Directive 200	2/95/EC (RoHS Directive), EU Directive 2011/65/	•	ast Directive)	and with EU			Total		
empliance with the above EU Directives has been verified via internal	l design controls,	supplier declarations, and for analytical test da	ta.			1.22	(mg) Total	Wire Bond	% of Total Weight	0.86
a chemical substance is absent from the list above, the chemical sub chnology Incorporated's knowledge and belief as of the date of this emical substance, if any, is not below the threshold of regulatory co	document, there i	s no credible reason to believe that the unavoic					Doped Gold	7440-57-5	100.00	
							·			
olding compounds used by Microchip meet the UL94 V0 flammability p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/		tics. You can access the UL iQTM family of dat	abases to obta	in a test repo	rt at		·	Total	100.00	
	•	•		·		25.73	(mg) Total	Total Plating on external leads (pins)	100.00 % of Total Weight	18.07
p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are ma	rm concerning sul st of its knowledg e it has been comp sure as trade secr e average weight	chloride (PVC) plastic. "Window envelopes" us ostances restricted by RoHS in Microchip Tech e and belief, as of the date listed in this form. M oiled based on the ranges provided in Material S ets and some information may not have been p of these parts and the average weight of anticip	nology Incorpo icrochip Techi safety Data Shrovided by sul ated significar	prated's semic nology Incorp eets provided ocontract assent toxic metals	on the outer conductor orated cannot by raw emblers and	25.73	(mg) Total	Plating on external		18.07
p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are ma x and certain "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the information in this for vices in their original packing materials is true and correct to the bes arantee the completeness and accuracy of data in this form because terial suppliers. Supplier information is often protected from disclos w material suppliers. Information is provided only as estimates of the	rm concerning sul st of its knowledg it has been comp sure as trade secr e average weight netals, and non-m press or implied, dd its subsidiaries	chloride (PVC) plastic. "Window envelopes" us ostances restricted by RoHS in Microchip Teche e and belief, as of the date listed in this form. Mo- slied based on the ranges provided in Material S ets and some information may not have been p of these parts and the average weight of anticip etal materials contained within silicon devices with respect to the information provided in this	nology Incorpo icrochip Techi Safety Data Shrovided by sul ated significar (silicon IC) in to declaration. T	pracking slip prated's semic nology Incorp pets provided properties of toxic metals the finished parties of the contract assets the contract assets of the contract as a cont	conductor conductor orated cannot by raw emblers and is arts.	25.73		Plating on external leads (pins)	% of Total Weight	18.07
p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are ma x and certain "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the information in this for vices in their original packing materials is true and correct to the bes arantee the completeness and accuracy of data in this form because aterial suppliers. Supplier information is often protected from disclos w material suppliers. Information is provided only as estimates of the mponents. These estimates do not include trace levels of dopants, n crochip Technology Incorporated does not provide any warranty, ex oduct warranties provided by Microchip Technology Incorporated an	rm concerning sulst of its knowledg it has been computer as trade secre a average weight netals, and non-mpress or implied, id its subsidiaries.  Material Content liance on the info	chloride (PVC) plastic. "Window envelopes" us ostances restricted by RoHS in Microchip Teche and belief, as of the date listed in this form. Milled based on the ranges provided in Material sets and some information may not have been post these parts and the average weight of anticipetal materials contained within silicon devices with respect to the information provided in this are contained in Microchip's standard terms and Declarations and shall not be liable for any dam	nology Incorpoicrochip Technology Incorpoicrochip Technology Incovided by sul ated significan (silicon IC) in the declaration. The deconditions of ages, direct of an ages, direct of an ages, direct of an ages, direct of a conditions of ages, direct of a conditions of ages, direct of a conditions of a conditions of ages, direct of a conditions of a condition of a con	pracking slip pracking slip pracking semicology Incorp peets provided occontract asse to toxic metals the finished pa the exclusive, of sale. These	conductor conductor corated cannot by raw emblers and is arts.	25.73	Tin	Plating on external leads (pins)  7440-31-5	% of Total Weight 95.50	18.07

B1KE 48 TFBGA 10:43 AM : 5/6/2014

Semiconductor Device Ty	pe: 129 TFBGA 7x7x	1.0 (GW)		ination Base opper Alloy (	•			geneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e1
<del>-</del>		"Contained In"	% Total			51.44	(mg) Total	Mold Compound	% ot Total Weight	46.34
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	51.44	,	•		46.34
Silica, vitreous (or fused)	60676-86-0	Mold Compound	41.567	46.139	415,670	-	Silica, vitreous (or fused)	60676-86-0 Trade Secret	89.70 5.50	
Epoxy Resin Phenolic Resin	Trade Secret Trade Secret	Mold Compound  Mold Compound	2.549 2.085	2.829 2.315	25,487 20.853	-	Epoxy Resin Phenolic Resin	Trade Secret	5.50 4.50	
Carbon Black	1333-86-4	Mold Compound	0.139	0.154	1,390	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	13.175	14.625	131,753		Garbon Black	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	
					- 7,	1	Old33 HDC13	00001-11-0		
Nickel	7440-02-0	Lead Frame	1.431	1.589	14,313	Phenol, formaldehy	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	4	Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.734	0.815	7,340	4	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	24623-77-6	Lead Frame	0.184	0.204	1,835	(2-Met	hoxymethylethoxy)propanol	34590-94-8	0.80	
Gold Silica, vitreous (or fused)	7440-57-5 60676-86-0	Lead Frame Die Attach	0.037 0.280	0.041 0.311	367 2.800	-	Misc. Aluminium-hydroxide-oxide	system 24623-77-6	1.50 0.50	
Epoxy/Acrylic	Trade Secret	Die Attach	0.280	0.311	700	-	Aluminium-nyaroxide-oxide Gold	7440-57-5	0.50	
Silicon	7440-21-3	Chip (Die)	3,490	3.874	34.900	-	Gold	7440-57-5 Total		
Copper	7440-21-3	Wire Bond	0.934	1.037	9,341	0.39	(mg) Total	Die Attach	% of Total Weight	0.35
Palladium	7440-05-3	Wire Bond	0.934	0.029	259	0.39	Silica, vitreous (or fused)	60676-86-0	80.00	0.35
Paliadium Tin	7440-05-3	Plating on external leads (pins)	11.734	13.025	117,344		Epoxy/Acrylic	Trade Secret	20.00	
Silver	7440-21-5					_	EDOXY/ACTYLIC	rrade Secret	20.00	
					2.640			Total	100.00	
		Plating on external leads (pins)	0.365	0.405	3,648	2.07	(mm) Tatal	Total		2.40
Copper	7440-50-8	Plating on external leads (pins)	0.061	0.067	608	3.87	(mg) Total	Chip (Die)	% of Total Weight	3.49
	7440-50-8	Plating on external leads (pins)  TOTA	0.061			3.87	(mg) Total  Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight 100	3.49
Copper	7440-50-8 <b>0.111 g T</b> o	Plating on external leads (pins)  TOTA  Plating on external leads (pins)	0.061 LS: 100.000	0.067 111. <b>000</b>	608 1,000,000	3.87		Chip (Die)	% of Total Weight 100	3.49
Copper semiconductor device and its homogenous materials compl	7440-50-8 <b>0.111 g T</b> o	Plating on external leads (pins)  TOTA  Plating on external leads (pins)	0.061 LS: 100.000	0.067 111. <b>000</b>	608 1,000,000	3.87		Chip (Die) 7440-21-3	% of Total Weight 100	3.49
Copper semiconductor device and its homogenous materials compl tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	7440-50-8  0.111 g To	Plating on external leads (pins)  TOTA  otal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (F	0.061 LS: 100.000	0.067 111. <b>000</b>	608 1,000,000		Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	
Copper  semiconductor device and its homogenous materials completive 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 chemic prorated's knowledge and belief as of the date of this docum	7440-50-8  0.111 g To y with EU Directive 2002/95 ternal design controls, supplal substance is NOT an interest, there is no credible rea	Plating on external leads (pins)  TOTA  Dtal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (F  Diler declarations, and /or analytical test data.  Intional ingredient in the semiconductor device a	0.061 LS: 100.000 RoHS Recast Dire	0.067 111.000 ective) and wit	608 1,000,000 th EU		Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	
Copper  semiconductor device and its homogenous materials completive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ppliance with the above EU Directives has been verified via in the complete of the co	7440-50-8  0.111 g To y with EU Directive 2002/95 ternal design controls, supplal substance is NOT an interent, there is no credible reallatory scheme world-wide.	Plating on external leads (pins)  TOTA  DTAI MASS  EC (RoHS Directive), EU Directive 2011/65/EU (F  Diler declarations, and /or analytical test data.  Intional ingredient in the semiconductor device a son to believe that the unavoidable impurity cor	0.061 LS: 100.000 RoHS Recast Directors and, to the best of the description of the	0.067 111.000 ective) and wit of Microchip Te e chemical sub	608 1,000,000 th EU		Doped Silicon  (mg) Total  Copper	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8	% of Total Weight 100 100.00 % of Total Weight 97.30 2.70	
Copper  s semiconductor device and its homogenous materials complicative 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  npliance with the above EU Directives has been verified via in the chemical substance is absent from the list above, the 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 regulating compounds used by Microchip meet the UL94 V0 flamms://lul.com/global/eng/pages/offerings/industries/chemicals/plaprotective "tubes" in which the specific product is shipped a	7440-50-8  0.111 g To y with EU Directive 2002/95 ternal design controls, supparal substance is NOT an interent, there is no credible reallatory scheme world-wide. ability standard for plastics.	Plating on external leads (pins)  TOTA  ctal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (F  oblier declarations, and /or analytical test data.  ntional ingredient in the semiconductor device a son to believe that the unavoidable impurity cor  You can access the UL iQTM family of database	0.061 LS: 100.000 ROHS Recast Director of the less to obtain a test	0.067 111.000 ective) and wit	608 1,000,000 th EU echnology ostance, if	1.07	Doped Silicon  (mg) Total  Copper	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8 7440-05-3	% of Total Weight 100 100.00 % of Total Weight 97.30 2.70	
	7440-50-8  0.111 g To y with EU Directive 2002/95, ternal design controls, supp al substance is NOT an inte- ent, there is no credible rea ulatory scheme world-wide. ability standard for plastics. stics/ tre made from polyvinyl chlo his form concerning substant is knowledge and belief, as ten compiled based on the in did some information may in did the average weight of ar	Plating on external leads (pins)  TOTA  Dtal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (for the clarations, and /or analytical test data.  Intional ingredient in the semiconductor device a son to believe that the unavoidable impurity cor.  You can access the UL iQTM family of database or ide (PVC) plastic. "Window envelopes" used to the case restricted by RoHS in Microchip Technolog of the date listed in this form. Microchip Technolog of the date listed in Material Safety Data Sheets in the provided by subcontract assemble ticipated significant toxic metals components.	to the best of the provided by raw, is and raw mater is a single provided by raw, is and raw mater and manufactures.	0.067 111.000 ective) and wit  of Microchip Te echemical sub t report at g slip on the c semiconduct ed cannot gual material suppl rial suppliers.	608 1,000,000 th EU echnology ostance, if outer box and or devices in rantee the iers. Supplies	1.07	Doped Silicon  (mg) Total  Copper  Palladium	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8 7440-05-3 Total	% of Total Weight 100 100.00 % of Total Weight 97.30 2.70	0.96
Copper  s semiconductor device and its homogenous materials complictive 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 chemical properated's knowledge and belief as of the date of this docum, is not below the threshold of regulatory concern for any regulding 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 the original packing materials is true and correct to the best of inpleteness and accuracy of data in this form because it has be materials in some protected from disclosure as trade secrets and vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average weight of these parts as vided only as estimates of the average we	7440-50-8  0.111 g To y with EU Directive 2002/95.  ternal design controls, supple all substance is NOT an interest, there is no credible reallatory scheme world-wide.  ability standard for plastics.  tre made from polyvinyl chloris form concerning substat is knowledge and belief, as the compiled based on the lod some information may in a the average weight of arcon devices (silicon IC) in tity, express or implied, with	Plating on external leads (pins)  TOTA  tal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (for the clarations, and /or analytical test data.  Intional ingredient in the semiconductor device a son to believe that the unavoidable impurity cor.  You can access the UL iQTM family of database or ide (PVC) plastic. "Window envelopes" used to the case restricted by RoHS in 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. Microchip Technolog of the date listed in this form. Microchip Technolog of the date listed in this form. Sietely Data Sheets in the provided by subcontract assemble ticipated significant toxic metals components. In this declive in the information provided in this declived.	to 1.0.061 LS: 100.000  ROHS Recast Direction of the less to obtain a test of hold the packing by Incorporated's logy incorporated by Incorpor	0.067 111.000 ective) and wit  if Microchip Te e chemical sub t report at g slip on the co semiconduct d cannot guar material suppl rial suppliers. do not include usive, limited	608 1,000,000 th EU echnology ostance, if outer box and or devices in rantee the iers. Supplier Information is e trace levels	1.07	Doped Silicon  (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)	% of Total Weight 100 100.00 % of Total Weight 97.30 2.70 100.00 % of Total Weight	0.96
semiconductor device and its homogenous materials completive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via in the chemical substance is absent from the list above, the chemical substance is absent from the list above, the chemical portion of the composition of the compos	7440-50-8  0.111 g Tc y with EU Directive 2002/95/ ternal design controls, supplate substance is NOT an interent, there is no credible real ulatory scheme world-wide.  ability standard for plastics. stics/ re made from polyvinyl chlous is form concerning substants knowledge and belief, as seen compiled based on the individual condevices (silicon IC) in the subsidiaries are contained with the subsidiaries are contained as to Material Content Declines to Material Content Declines in the subsidiaries are contained as the subsidiaries are contained	Plating on external leads (pins)  TOTA  tal Mass  EC (RoHS Directive), EU Directive 2011/65/EU (final pine)  Diler declarations, and /or analytical test data.  Intional ingredient in the semiconductor device a son to believe that the unavoidable impurity cor.  You can access the UL iQTM family of database or ide (PVC) plastic. "Window envelopes" used to 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. 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. Microchip technological provided in the set of the provided by subcontract assemble ticipated significant toxic metals components. The finished parts.  Tespect to the information provided in this declid in Microchip's standard terms and conditions areations and shall not be liable for any damages	to the best of contraction of the set of the provided by raw in the set of th	0.067 111.000 ective) and wit  of Microchip Te echemical sub t report at g slip on the c semiconduct ed cannot gua material suppl rial suppliers. do not include usive, limited   e provided in et, consequent	608 1,000,000 th EU echnology stance, if outer box and or devices in rantee the iers. Supplier Information i e trace levels product Microchip's	1.07	Doped Silicon  (mg) Total  Copper  Palladium  (mg) Total  Tin	Chip (Die) 7440-21-3 Total Wire Bond 7440-50-8 7440-05-3 Total  Plating on external leads (pins)	% of Total Weight 100 100.00 % of Total Weight 97.30 2.70 100.00 % of Total Weight	0.96

APK 10:44 AM : 5/6/2014

MICROCHIP  Semiconductor Device Type:	MME 34 WFB(	\$ <b>A</b> 4x6x0.8mm (2M/2U)		ination Base opper Alloy (			•	geneous Materials: g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e1
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	14.80	(mg) Total	Mold Compound	% ot Total Weight	39.89
FUSED SILICA	60676-86-0	Mold Compound	35.901	13.319	359,010		FUSED SILICA	60676-86-0	90.00	
EPOXY RESINS, CURED	Trade Secret	Mold Compound	1.935	0.718	19.347		EPOXY RESINS, CURED	Trade Secret	4.85	
IIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	1.935	0.718	19,347		HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / 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			Total	100.00	
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	
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		Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.762	0.283	7,615		Silica, chemically prepared	7631-86-9	8.00	
Magnesium silicate	14807-96-6	Lead Frame	0.609	0.226	6,092		Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.609	0.226	6,092		Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.244	0.090	2,437		Magnesium silicate	14807-96-6	2.00	
Misc.	system	Lead Frame	0.457	0.170	4,569		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	(=	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			Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.950	0.352	9,500	4.44	(mg) Total	Die Attach	% of Total Weight	11.97
0.00	0	Wire Bond	0.000	0.000	0		FUSED SILICA	60676-86-0	80.00	11101
Tin	7440-31-5	Plating on external leads (pins)	12.358	4.585	123,577	Ba	asic Duromer:Phenolic resin	26834-02-6	20.00	
Silver	7440-22-4	Plating on external leads (pins)	0.518	0.192	5,176	50	iolo Daromon, nonono room	Total	100.00	
Copper	7440-50-8	Plating on external leads (pins)	0.065	0.024	647	1.41	(mg) Total	Chip (Die)	% of Total Weight	3.79
		TOTALS:	100.000	37.100	1.000.000		Doped Silicon	7440-21-3	100	
	0.0371 a T				1,222,222		Bopod Cilicon	Total	100.00	
is semiconductor device and its homogenous materials comply witl			S Recast Dire	ctive) and wit	h EU	0.35	(mg) Total	Wire Bond	% of Total Weight	0.95
rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						0.35	· • ·			0.95
empliance with the above EU Directives has been verified via interna	ıl design controls, sup	plier declarations, and /or analytical test data.					Doped Gold	7440-57-5	100.00	
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 regulator	there is no credible rea ry scheme world-wide.	son to believe that the unavoidable impurity concer						Total	100.00	
	v standard for plactice									
tp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/	i	•		·		4.80	(mg) Total	Plating on external leads (pins)	% of Total Weight	12.94
p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ e protective "tubes" in which the specific product is shipped are ma	i	•		·	outer box and	4.80	(mg) Total		% of Total Weight 95.50	12.94
p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ te protective "tubes" in which the specific product is shipped are ma rtain "reels" may be made from PVC plastic. crochip Technology Incorporated believes the information in this fo eir original packing materials is true and correct to the best of its kni mpleteness and accuracy of data in this form because it has been control in the protected from disclosure as trade secrets and so ovided only as estimates of the average weight of these parts and the	ade from polyvinyl chl prim concerning substa owledge and belief, as ompiled based on the ome information may n ne average weight of a	oride (PVC) plastic. "Window envelopes" used to ho nees restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technolog ranges provided in Material Safety Data Sheets prov of have been provided by subcontract assemblers a nticipated significant toxic metals components. The	old the packin acorporated's by Incorporate rided by raw r and raw mater	g slip on the o semiconduct d cannot gua naterial suppl rial suppliers.	or devices in rantee the iers. Supplier Information is	4.80		leads (pins)		12.94
olding compounds used by Microchip meet the UL.94 V0 flammability they.l/ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ ene protective "tubes" in which the specific product is shipped are materialn "reels" may be made from PVC plastic.  icrochip Technology Incorporated believes the information in this foliair original packing materials is true and correct to the best of its knowledge of the second of the second in this form because it has been or contraction is often protected from disclosure as trade secrets and so rovided only as estimates of the average weight of these parts and the dopants, metals, and non-metal materials contained within silicon discrochip Technology Incorporated does not provide any warranty, exarranties provided by Microchip Technology Incorporated and its sul uotations, sales order acknowledgement, and invoices.	ade from polyvinyl chlorm concerning substate to whedge and belief, as compiled based on the ome information may ne average weight of a devices (silicon IC) in texpress or implied, with	oride (PVC) plastic. "Window envelopes" used to homes restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technolog ranges provided in Material Safety Data Sheets provot have been provided by subcontract assemblers anticipated significant toxic metals components. The he finished parts.  respect to the information provided in this declarate.	old the packin accrporated's y Incorporate rided by raw r and raw mater se estimates ion. The exclu	g slip on the of semiconduct d cannot gua naterial suppl rial suppliers. do not include usive, limited	or devices in rantee the iers. Supplier Information is e trace levels product	4.80	Tin	leads (pins) 7440-31-5	95.50	12.94
p://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ te protective "tubes" in which the specific product is shipped are ma rtain "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the information in this fo eir original packing materials is true and correct to the best of its kin impleteness and accuracy of data in this form because it has been corrections in often protected from disclosure as trade secrets and so ovided only as estimates of the average weight of these parts and the dopants, metals, and non-metal materials contained within silicon de crochip Technology Incorporated does not provide any warranty, ex arranties provided by Microchip Technology Incorporated and its sul	ade from polyvinyl chlorer concerning substate to will be seen and belief, as compiled based on the one information may ne average weight of a devices (silicon IC) in the press or implied, with bisidiaries are contained.	oride (PVC) plastic. "Window envelopes" used to homees restricted by RoHS in Microchip Technology In of the date listed in this form. Microchip Technolog ranges provided in Material Safety Data Sheets provot have been provided by subcontract assemblers anticipated significant toxic metals components. The hef finished parts.  respect to the information provided in this declarated in Microchip's standard terms and conditions of standard terms.	old the packin acorporated's y Incorporate ided by raw r and raw mates se estimates ion. The exclusion. The sale. These ar	g slip on the of semiconduct d cannot guanaterial supplical suppliers, do not include usive, limited a provided in	or devices in rantee the iers. Supplier Information is e trace levels product Microchip's	4.80	Tin Silver	leads (pins) 7440-31-5 7440-22-4	95.50	12.94

34 WFBGA 10:44 AM : 5/6/2014

MICROCHIP  Semiconductor Device Type	e: MAQE 48 WFB	GA 4x6x0.8mm (3T)		nination Base Copper Alloy				geneous Materials: . pc boards, displays	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e1
		"Contained In"	% I otal	I	1					
Basic Substance	CAS Number	Sub-Component	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 12,633	ECULAR EPOXY	/ EPOXY PHENOL RESIN	Trade Secret	9.75	
CRYSTALLINE SILICA CARBON BLACK	14808-60-7 1333-86-4	Mold Compound  Mold Compound	1.263 0.253	0.363 0.072	2,526		CRYSTALLINE SILICA CARBON BLACK	14808-60-7 1333-86-4	2.50 0.50	
Copper	7440-50-8	Lead Frame	8.616	2.473	86,160		CARBON BLACK	Total		J
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		Glass fibers	65997-17-3	21.40	
Nickel	7440-02-0	Lead Frame	0.936	0.269	9,360	, formaldehyde, (ch	nloromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.600	0.172	6,000	1	Silica, chemically prepared	7631-86-9	8.00	
Magnesium silicate	14807-96-6	Lead Frame	0.480	0.138	4,800		Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.480	0.138	4,800		Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.192	0.055	1,920		Magnesium silicate	14807-96-6	2.00	
Misc.	system	Lead Frame	0.360	0.103	3,600		Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.120	0.034	1,200	(2-Me	thoxymethylethoxy)propanol	34590-94-8	0.80	
Gold	7440-57-5	Lead Frame	0.024	0.007	240		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		Gold	7440-57-5	0.10	
Fused Silica	60676-86-0	Die Attach	0.052	0.015	520			Total		
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 0.537	59,800		Phenol Resin	Trade Secret	15.00	
Doped Gold Tin	7440-57-5	Wire Bond	1.870 16.722	4.799	18,700		Fused Silica	60676-86-0	40.00	
Silver	7440-31-5 7440-22-4	Plating on external leads (pins)  Plating on external leads (pins)	0.700	0.201	167,221 7.004	-	Liquid epoxy resin Synthetic Rubber	Trade Secret Trade Secret	15.00 15	
Copper	7440-22-4	Plating on external leads (pins)  Plating on external leads (pins)	0.700	0.025	876		Synthetic Rubber	Total	100.00	l
Сорреі	7440-30-0		ALS: 100.000	28.700	1,000,000	1.72	(mg) Total	Chip (Die)	% of Total Weight	5.98
	0.0287 g To		ALG. 100.000	20.700	1,000,000	1.72	Doped Silicon	7440-21-3	100	3.90
is semiconductor device and its homogenous materials comply ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			(RoHS Recast Dire	ective) and wi	th EU	0.54	(mg) Total	Wire Bond	% of Total Weight	1.87
mpliance with the above EU Directives has been verified via inte	rnal design controls, supp	lier declarations, and /or analytical test data.					Doped Gold	7440-57-5	100.00	
chemical substance is absent from the list above, the chemical orporated'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 credible reas							Total	100.00	1
lding compounds used by Microchip meet the UL94 V0 flammab p://ul.com/global/eng/pages/offerings/industries/chemicals/plast		You can access the UL iQTM family of databa	ses to obtain a tes	t report at		5.03	(mg) Total	Plating on external leads (pins)	% of Total Weight	17.51
e protective "tubes" in which the specific product is shipped are tain "reels" may be made from PVC plastic.	made from polyvinyl chlo	ride (PVC) plastic. "Window envelopes" used	to hold the packing	g slip on the	outer box and		Tin	7440-31-5	95.50	
crochip Technology Incorporated believes the information in this irr 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 ovided only as estimates of the average weight of these parts and dopants, metals, and non-metal materials contained within silico	knowledge and belief, as n compiled based on the r I some information may no d the average weight of an	of the date listed in this form. Microchip Tech anges provided in Material Safety Data Sheets of have been provided by subcontract assemb ticipated significant toxic metals components	nology Incorporate s provided by raw elers and raw mate	ed cannot gua material supp rial suppliers.	rantee the liers. Supplier Information is	5	Silver	7440-22-4	4.00	
crochip Technology Incorporated does not provide any warranty rranties provided by Microchip Technology Incorporated and its otations, sales order acknowledgement, and invoices.							Copper	7440-50-8	0.50	
								Total	100.00	

Semiconductor Device 1	ype: 25 VFBGA 3x3x0.8	mm (FE)		ination Base opper Alloy (	•		•	geneous Materials: g. pc boards, display:	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e1
Basia Subatanaa	CAS Number	"Contained In" Sub-Component	% Fotal Weight	mg/part		7.50	(mg) Total	Mold Compound	% ot Total Weight	46.875
Basic Substance fused silica	60676-86-0	Mold Compound	35,442	5.671	<b>ppm</b> 354.422		fused silica	60676-86-0	75.61	1
solid epoxy resin	25068-38-6	Mold Compound	5.030	0.805	50.297		solid epoxy resin	25068-38-6	10.73	1
phenol resin	108-95-2	Mold Compound	5.030	0.805	50,297	1	phenol resin	108-95-2	10.73	
Cristalline Silica	112945-52-5	Mold Compound	1.144	0.183	11,438		Cristalline Silica	112945-52-5	2.44	
carbon black	1333-86-4	Mold Compound	0.230	0.037	2,297		carbon black		0.49	
Copper	7440-50-8	Lead Frame	10.321	1.651	103,213			Total	100.00	1
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		Copper	7440-50-8	35.90	
Silica, chemically prepared	7631-86-9	Lead Frame	2.300	0.368	23,000	1	Glass fibers		21.40	1
Nickel	7440-02-0	Lead Frame	1.121	0.179	11,213		Phenol polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.719	0.115	7,188	1	Silica, chemically prepared	7631-86-9	8.00	1
Magnesium silicate	14807-96-6	Lead Frame	0.575	0.092	5,750		Nickel	7440-02-0	3.90	1
Araldite GY 250	25068-38-6	Lead Frame	0.575	0.092	5,750	l	Barite		2.50	ł
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.230	0.037	2,300	ł	Magnesium silicate	14807-96-6	2.00	4
Misc. Aluminium-hydroxide-oxide	system 24623-77-6	Lead Frame Lead Frame	0.431 0.144	0.069 0.023	4,313 1,438	(O.M-4	Araldite GY 250 hoxymethylethoxy)propanol	25068-38-6 34590-94-8	2.00 0.80	
Gold	7440-57-5	Lead Frame	0.144	0.023	288	(Z-iviet	noxymetnyletnoxy)propanol Misc	34590-94-8 system	1.50	1
Silver (Aq)	7440-37-3	Die Attach	0.905	0.005	9.050		Aluminium-hydroxide-oxide		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			Total	100.00	
Polymeric Resin	Trade Secret	Die Attach	0.034	0.005	339	0.20	(mg) Total	Die Attach	% of Total Weight	
Silicon	7440-21-3	Chip (Die)	5.000	0.800	50,000		Silver (Ag)	7440-22-4	72.40	1
Doped Gold	7440-57-5	Wire Bond	0.625	0.100	6,250		Diester Resin	Trade Secret	18.10	
Tin			16 888	2 702	168 875	1				
Tin Silver	7440-31-5 7440-22-4	SAC 305 Solder ball SAC 305 Solder ball	16.888 0.525	2.702	168,875 5,250		Acrlate Resin	Trade Secret	6.79	
Silver	7440-22-4	SAC 305 Solder ball	0.525	0.084	5,250				6.79 2.71	]
			0.525 0.088	0.084 0.014	5,250 875	0.80	Acrlate Resin	Trade Secret Trade Secret	6.79 2.71	
Silver	7440-22-4	SAC 305 Solder ball SAC 305 Solder ball TOTALS:	0.525 0.088	0.084	5,250	0.80	Acrlate Resin Polymeric Resin	Trade Secret Trade Secret Total	6.79 2.71 100.00	
Silver	7440-22-4 7440-50-8 0.0160 g To	SAC 305 Solder ball SAC 305 Solder ball TOTALS:	0.525 0.088 100.000	0.084 0.014 16.000	5,250 875 <b>1,000,000</b>	0.80	Acrlate Resin Polymeric Resin (mg) Total	Trade Secret Trade Secret  Total  Chip (Die)	6.79 2.71 100.00 % of Total Weight	5
Silver Copper  s semiconductor device and its homogenous materials com	7440-22-4 7440-50-8 0.0160 g Tot ply with EU Directive 2002/95/E	SAC 305 Solder ball SAC 305 Solder ball TOTALS: al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoH	0.525 0.088 100.000	0.084 0.014 16.000	5,250 875 <b>1,000,000</b>	0.80	Acrlate Resin Polymeric Resin (mg) Total	Trade Secret Trade Secret Total Chip (Die) 7440-21-3	6.79 2.71 100.00 % of Total Weight	5
Silver Copper  is semiconductor device and its homogenous materials comective 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	7440-22-4 7440-50-8  0.0160 g Tot ply with EU Directive 2002/95/E internal design controls, suppl ical substance is NOT an intent	SAC 305 Solder ball SAC 305 Solder ball TOTALS: al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoH er declarations, and /or analytical test data.	0.525 0.088 100.000 S Recast Dire	0.084 0.014 16.000 ctive) and wit	5,250 875 1,000,000 h EU		Acriate Resin Polymeric Resin  (mg) Total  Doped Silicon  (mg) Total	Trade Secret Trade Secret Total Chip (Die) 7440-21-3 Total Wire Bond	6.79 2.71 100.00 % of Total Weight 100 100.00 % of Total Weight	5
Silver Copper  s semiconductor device and its homogenous materials comective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  mpliance with the above EU Directives has been verified via	7440-22-4 7440-50-8  0.0160 g Tot ply with EU Directive 2002/95/E internal design controls, suppl ical substance is NOT an intent ment, there is no credible rease	SAC 305 Solder ball SAC 305 Solder ball TOTALS: al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoH er declarations, and /or analytical test data.	0.525 0.088 100.000 S Recast Dire	0.084 0.014 16.000 ctive) and wit	5,250 875 1,000,000 h EU		Acriate Resin Polymeric Resin  (mg) Total  Doped Silicon	Trade Secret Trade Secret Total Chip (Die) 7440-21-3 Total	6.79 2.71 100.00 % of Total Weight 100	5
Silver Copper  is semiconductor device and its homogenous materials comective 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 relding compounds used by Microchip meet the UL94 V0 flam	7440-22-4 7440-50-8  0.0160 g Tot ply with EU Directive 2002/95/E internal design controls, suppl ical substance is NOT an intent ment, there is no credible reas- gulatory scheme world-wide. mability standard for plastics. \( \)	SAC 305 Solder ball SAC 305 Solder ball TOTALS: al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoH ier declarations, and /or analytical test data. ional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer-	0.525 0.088 100.000 S Recast Dire	0.084 0.014 16.000 ctive) and wit	5,250 875 1,000,000 h EU		Acriate Resin Polymeric Resin  (mg) Total  Doped Silicon  (mg) Total	Trade Secret Trade Secret Total Chip (Die) 7440-21-3 Total Wire Bond	6.79 2.71 100.00 % of Total Weight 100 0 % of Total Weight 100.00	0.625
Silver Copper  is semiconductor device and its homogenous materials comective 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 reliding compounds used by Microchip meet the UL94 V0 flam p://ul.com/global/eng/pages/offerings/industries/chemicals/pe protective "tubes" in which the specific product is shipped	7440-22-4 7440-50-8  0.0160 g Total ply with EU Directive 2002/95/E internal design controls, supplical substance is NOT an intentiment, there is no credible reasingulatory scheme world-wide.  Mability standard for plastics.	SAC 305 Solder ball SAC 305 Solder ball TOTALS:  al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoH ier declarations, and /or analytical test data.  ional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concervous can access the UL iQTM family of databases to	0.525 0.088 100.000 S Recast Dire	0.084 0.014 16.000 ctive) and wit	5,250 875 1,000,000 h EU echnology stance, if	0.10	Acriate Resin Polymeric Resin  (mg) Total  Doped Silicon  (mg) Total  Doped Gold	Trade Secret Trade Secret Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	6.79 2.71 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.625
Silver Copper  is semiconductor device and its homogenous materials comective 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 reliding compounds used by Microchip meet the UL94 V0 flam p://ul.com/global/eng/pages/offerings/industries/chemicals/p	7440-22-4 7440-50-8  0.0160 g Total ply with EU Directive 2002/95/E internal design controls, supplical substance is NOT an intentiment, there is no credible reasingulatory scheme world-wide.  Mability standard for plastics.	SAC 305 Solder ball SAC 305 Solder ball TOTALS:  al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoH ier declarations, and /or analytical test data.  ional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concervous can access the UL iQTM family of databases to	0.525 0.088 100.000 S Recast Dire	0.084 0.014 16.000 ctive) and wit	5,250 875 1,000,000 h EU echnology stance, if		Acriate Resin Polymeric Resin  (mg) Total  Doped Silicon  (mg) Total	Trade Secret Trade Secret Total Chip (Die) 7440-21-3 Total Wire Bond	6.79 2.71 100.00 % of Total Weight 100 0 % of Total Weight 100.00	0.625
Silver Copper  is semiconductor device and its homogenous materials comective 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 reliding compounds used by Microchip meet the UL94 V0 flam p://ul.com/global/eng/pages/offerings/industries/chemicals/pe protective "tubes" in which the specific product is shipped	7440-22-4 7440-50-8  0.0160 g Tot ply with EU Directive 2002/95/E internal design controls, suppl ical substance is NOT an intent ment, there is no credible reas- gulatory scheme world-wide. mability standard for plastics.\ lastics/ are made from polyvinyl chlor this form concerning substance if its knowledge and belief, as o been compiled based on the ra and some information may not and the average weight of ant	SAC 305 Solder ball SAC 305 Solder ball TOTALS:  al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoH ier declarations, and /or analytical test data.  ional 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 ho the serious trick of the date listed in this form. Microchip Technology In the date listed in this form. Microchip Technolog	0.525 0.088 100.000 S Recast Dire to the best of the b	0.084 0.014 16.000  Ctive) and wit  Microchip Te chemical sub- report at g slip on the common guaraterial suppliat suppliat suppliers.	5,250 875 1,000,000 h EU echnology stance, if outer box and or devices in rantee the iers. Supplier Information is	2.80	Acriate Resin Polymeric Resin  (mg) Total  Doped Silicon  (mg) Total  Doped Gold	Trade Secret Trade Secret Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5	6.79 2.71 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.625
Silver Copper  is semiconductor device and its homogenous materials comective 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, i, is not below the threshold of regulatory concern for any realization of the date of this docu prival compounds used by Microchip meet the UL94 V0 flam pc/Jul.com/global/eng/pages/offerings/industries/chemicals/reproductive "tubes" in which the specific product is shipped tain "reels" may be made from PVC plastic.  Corochip Technology Incorporated believes the information in irroriginal packing materials is true and correct to the best of mpleteness and accuracy of data in this form because it has formation is often protected from disclosure as trade secrets ovided only as estimates of the average weight of these parts or the secretary of the average weight of these parts.	7440-22-4 7440-50-8  0.0160 g Tot ply with EU Directive 2002/95/E internal design controls, suppl ical substance is NOT an intent ment, there is no credible reas- gulatory scheme world-wide. mability standard for plastics.\(^1\) are made from polyvinyl chlor this form concerning substance if its knowledge and belief, as o been compiled based on the ra and some information may not and the average weight of ant illicon devices (silicon IC) in the anty, express or implied, with re	SAC 305 Solder ball SAC 305 Solder ball TOTALS:  al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoH er declarations, and /or analytical test data.  ional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer  ou can access the UL iQTM family of databases to ide (PVC) plastic. "Window envelopes" used to ho the serious traction of the date listed in this form. Microchip Technology In the date listed in this form. Microchip Technology In the date listed in this form. Microchip Technology In the date listed in this form. Microchip Technology In the date listed in this form. Microchip Technology In the date listed in this form. Microchip Technology inges provided in Material Safety Data Sheets pro have been provided by subcontract assemblers a icipated significant toxic metals components. The inished parts.	0.525 0.088 100.000 S Recast Dire to the best of the b	0.084 0.014 16.000  ctive) and wit  Microchip Techemical sub- report at g slip on the constructed cannot guaranterial suppliers. Jo not included sixty, limited passive, limited	5,250 875 1,000,000 h EU echnology stance, if outer box and or devices in rantee the iers. Supplier information is trace levels	2.80	Acriate Resin Polymeric Resin (mg) Total  Doped Silicon  (mg) Total  Doped Gold  (mg) Total	Trade Secret Trade Secret Total Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total SAC 305 Solder ball	6.79 2.71 100.00 % of Total Weight 100 % of Total Weight 100.00  % of Total Weight 100.00  % of Total Weight	0.625
Silver Copper  s semiconductor device and its homogenous materials comective 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, i, is not below the threshold of regulatory concern for any re idling compounds used by Microchip meet the UL94 V0 flam p://ul.com/global/eng/pages/offerings/industries/chemicals/perotective "tubes" in which the specific product is shipped tain "reels" may be made from PVC plastic.  erochip Technology Incorporated believes the information in irroriginal packing materials is true and correct to the best of the protected of the average weight of these parts wided only as estimates of the average weight of these parts of the protected of the average weight of these parts of the protected of the average weight of these parts of the protected of	7440-22-4 7440-50-8  0.0160 g Tot ply with EU Directive 2002/95/E internal design controls, suppl ical substance is NOT an intent ment, there is no credible reas- gulatory scheme world-wide. mability standard for plastics. \(^1\) are made from polyvinyl chlor this form concerning substance if its knowledge and belief, as of been compiled based on the ra and some information may not and the average weight of ant illicon devices (silicon IC) in the anty, express or implied, with ra it its subsidiaries are contained inges to Material Content Declar	SAC 305 Solder ball SAC 305 Solder ball TOTALS:  al Mass C (RoHS Directive), EU Directive 2011/65/EU (RoH er declarations, and /or analytical test data.  ional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concer  ou can access the UL iQTM family of databases to ide (PVC) plastic. "Window envelopes" used to he ces restricted by RoHS in Microchip Technology In f the date listed in this form. Microchip Technology inges provided in Material Safety Data Sheets pro have been provided by subcontract assemblers a icipated significant toxic metals components. The finished parts.  espect to the information provided in this declarat in Microchip's standard terms and conditions of stations and shall not be liable for any damages, dia	0.525 0.088 100.000 S Recast Dire to the best of the b	0.084 0.014 16.000  ctive) and wit  Microchip Techemical sub- report at g slip on the constructed cannot gual- naterial suppliers. do not include sive, limited particulated in t, consequent	5,250 875 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	2.80	Acriate Resin Polymeric Resin (mg) Total Doped Silicon  (mg) Total  Doped Gold  (mg) Total  Tin	Trade Secret	6.79 2.71 100.00 % of Total Weight	0.625

25 VFBGA 10:45 AM : 5/6/2014

MICROCHIP  Semiconductor Device Type:	BG 121 (Le	ad) TFBGA 10x10x1 (2x)		ation Base (			Package Homogeneou: 8.1 Electronics (e.g. pc bo			JEDEC 97 Product Marking and/or Pkg. Labeling e1
		"Contained In"	% Total			107.44	(mg) Total	Mold Compound /	% ot Total	
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	107.44		Halogen-Free	Weight	33.04
fused silica solid epoxy resin	60676-86-0 25068-38-6	Mold Compound / Halogen-Free Mold Compound / Halogen-Free	47.464 3.909	91.321 7.521	474,640 39.088		fused silica solid epoxy resin	60676-86-0 25068-38-6	85.00 7.00	
phenol resin	108-95-2	Mold Compound / Halogen-Free	3.630	6.983	36,296		phenol resin	108-95-2	6.50	
Metal Hudroxide	14808-60-7	Mold Compound / Halogen-Free	0.558	1.074	5,584		Metal Hudroxide	14808-60-7	1.00	
Carbon black	1333-86-4	Mold Compound / Halogen-Free	0.279	0.537	2,792		Carbon black	1333-86-4	0.50	
Copper	7440-50-8	Substrate + Solder Mask (AUS308)Halogen-Free	7.762	14.933	77,616			Total	100.00	=
Glass fibers	65997-17-3	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	
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46,267		Copper	7440-50-8	35.90	
Silica, chemically prepared	7631-86-9	Substrate + Solder Mask (AUS308)Halogen-Free	1.730	3.328	17,296		Glass fibers	65997-17-3	21.40	
Nickel	7440-02-0	Substrate + Solder Mask (AUS308)Halogen-Free	0.843	1.622	8,432		Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	21.40	
Barite	7727-43-7	Substrate + Solder Mask (AUS308)Halogen-Free	0.541	1.040	5,405		Silica, chemically prepared	7631-86-9	8.00	
Magnesium silicate	14807-96-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.832	4,324		Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.832	4,324		Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Substrate + Solder Mask (AUS308)Halogen-Free	0.173	0.333	1,730		Magnesium silicate	14807-96-6	2.00	
Misc.	system	Substrate + Solder Mask (AUS308)Halogen-Free	0.324	0.624	3,243		Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Substrate + Solder Mask (AUS308)Halogen-Free Substrate + Solder Mask (AUS308)Halogen-Free	0.108 0.022	0.208 0.042	1,081		(2-Methoxymethylethoxy)propanol	34590-94-8	0.80 1.50	
Gold Silver (Aa)	7440-57-5 7440-22-4	Die Attach	0.022	1.059	216 5.502		Misc. Aluminium-hydroxide-oxide	system 24623-77-6	0.50	
Diester Resin	Trade Secret	Die Attach	0.138	0.265	1.376		Gold	7440-57-5	0.10	
Acrlate Resin	Trade Secret	Die Attach	0.052	0.099	516		3014	Total		1
					1	1.46	(mg) Total		% of Total	0.76
Polymeric Resin	Trade Secret	Die Attach	0.021	0.040	206			Die Attach	Weight	ao
For reporting purposes, silicon integrated circuit presumed to be all silicon Tin (Sn)	7440-21-3 7440-31-5	Chip (Die) Solder Ball (SAC405)	7.940 12.224	15.277 23.519	79,400 122,240		Silver (Ag) Diester Resin	7440-22-4 Trade Secret	72 18	
Silver (Ag)	7440-31-5	Solder Ball (SAC405) Solder Ball (SAC405)	0.512	0.985	5,120		Acriate Resin	Trade Secret	18 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		1 diyinche recair	Total	100.00	ı
Palladium (Pd)	7440-05-3	Bond Wire	0.010	0.020	104.00	15.28	Total (mg)	Chip (Die)	% of Total Weight	
		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	<u>1</u>
his semiconductor device and its homogenous materials comply wit U Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	th EU Directive 20	002/95/EC (RoHS Directive), EU Directive 2011/65/E	EU (RoHS Rec	ast Directive	e) and with	24.63	(mg) Total	Solder Ball (SAC405)	% of Total Weight	
compliance with the above EU Directives has been verified via interna-	al design controls	s, supplier declarations, and /or analytical test data	a.				Tin (Sn)	7440-31-5	95.50	
a chemical substance is absent from the list above, the chemical su echnology Incorporated's knowledge and belief as of the date of this hemical substance, if any, is not below the threshold of regulatory c	document, there	e is no credible reason to believe that the unavoida					Silver (Ag)			
		games, contains notice that						7440-22-4	4.00	
olding compounds used by Microchip meet the UL94 V0 flammabilit tp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics		astics. You can access the UL iQTM family of data	bases to obta	in a test repo	ort at		Copper (Cu)	7440-50-8	0.50	
he protective "tubes" in which the specific product is shipped are muter box and certain "reels" may be made from PVC plastic.	ade from polyvin	yl chloride (PVC) plastic. "Window envelopes" use	ed to hold the	packing slip	on the			Total	100.00	-
icrochip Technology Incorporated believes the information in this fo evices in their original packing materials is true and correct to the b	est of its knowled because it has b n disclosure as t	lge and belief, as of the date listed in this form. Mi een compiled based on the ranges provided in Ma rade secrets and some information may not have I	crochip Tech aterial Safety I been provided	nology Incor Data Sheets   I by subcont cipated signif	porated provided ract ficant toxic	2.00	(mg) Total	Bond Wire	% of Total Weight	
y raw material suppliers. Supplier information is often protected fror ssemblers and raw material suppliers. Information is provided only netals components. These estimates do not include trace levels of de			evices (silicon	IC) in the fin	isnea					
annot guarantee the completeness and accuracy or data in this form y raw material suppliers. Supplier information is often protected froi seemblers and raw material suppliers. Information is provided only a letals components. These estimates do not include trace levels of drarts. licrochip Technology Incorporated does not provide any warranty, e roduct warranties provided by Microchip Technology Incorporated a rovided in Microchip's quotations, sales order acknowledgement, ar	opants, metals, a xpress or implied and its subsidiarie	nd non-metal materials contained within silicon de	declaration. T	he exclusive,	, limited		Gold (Au)	7440-57-5	99.0000	
raw material suppliers. Supplier information is often protected fron semblers and raw material suppliers. Information is provided only a etals components. These estimates do not include trace levels of durits. crochip Technology Incorporated does not provide any warranty, e oduct warranties provided by Microchip Technology Incorporated a	xpress or implied nd its subsidiaried in invoices. Material Conten s' reliance on the	nd non-metal materials contained within silicon de I, with respect to the information provided in this o es are contained in Microchip's standard terms and t Declarations and shall not be liable for any dama	declaration. To d conditions of ages, direct of	he exclusive of sale. These indirect, co	, limited e are nsequential		Gold (Au) Palladium (Pd)	7440-57-5 7440-05-3	99.0000	
raw material suppliers. Supplier information is often protected froisemblers and raw material suppliers. Information is provided only a tetals components. These estimates do not include trace levels of dorts.  crochip Technology Incorporated does not provide any warranty, e oduct warranties provided by Microchip Technology Incorporated a voided in Microchip's quotations, sales order acknowledgement, arcrochip disclaims any duty to notify users of updates or changes to otherwise, suffered by users or third parties as a result of the user	xpress or implied nd its subsidiaried in invoices. Material Conten s' reliance on the	nd non-metal materials contained within silicon de I, with respect to the information provided in this o es are contained in Microchip's standard terms and t Declarations and shall not be liable for any dama	declaration. To d conditions of ages, direct of	he exclusive of sale. These indirect, co	, limited e are nsequential		, ,			

BG 121 TFBGA 10:45 AM: 5/6/2014

Semiconductor Device Typ	e: MS and IIA	8 (Lead) MSOP 3x3mm (A3)		nation Base / pper Alloy (C				geneous Materials: . pc boards, displays	·)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Typ	e. WS and GA	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	20.43	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	17.755	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	1.567	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	1.044	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.063	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314			Total		
Iron	7439-89-6	Lead Frame	0.247	0.063	2,468	2.69	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.051	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.003	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.144	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.027	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.014	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.007	263	0.19	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75,000		Silver (Ag)	7440-22-4	75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.050	1,965		Modified Epoxy Resin	13561-08-5	14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.001	35	Di	glycidylether 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	0.320	12,500		Modified Amine	827-43-0	4	
	•	TOTALS:	100.000	25.600	4 000 000				100.00	•
		IUIALS:	100.000	25.600	1,000,000			Total	100.00	
semiconductor device and its homogenous materials compl titve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		g Total Mass				1.92	Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3	% of Total Weight	7.5
	y with EU Directive	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol				1.92		Chip (Die)	% of Total Weight	7.5
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 chemical  porated's knowledge and belief as of the date of this docum	y with EU Directive of ternal design control al substance is NOT tent, there is no cred	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device an fible reason to believe that the unavoidable impurity conce	HS Recast Dire	ective) and with	h EU	0.05		Chip (Die) 7440-21-3	% of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	y with EU Directive in ternal design control al substance is NOT ent, there is no credulatory scheme work ability standard for p	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and tible reason to believe that the unavoidable impurity concide-wide.	HS Recast Dire	ective) and with of Microchip T e chemical sul	h EU		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium	% 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 themical substance is absent from the list above, the chemicar prorated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flamma	y with EU Directive of ternal design control al substance is NOT ent, there is no credulatory scheme workability standard for pastics/	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device an ilible reason to believe that the unavoidable impurity concid- wide.  plastics. You can access the UL iQTM family of databases	d, to the best centration of the	of Microchip T e chemical sul	h EU echnology bstance, 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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), ipliance with the above EU Directives has been verified via in the characteristic state of this above, the chemical substance is absent from the list above, the chemical reporated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flamma: //ul.com/global/eng/pages/offerings/industries/chemicals/plaprotective "tubes" in which the specific product is shipped a	y with EU Directive: ternal design contro al substance is NOT ent, there is no cred ulatory scheme worl ability standard for p stics/ are made from polyv his form concerning of its knowledge and een compiled based seen compiled based in these parts and the	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device am lible reason to believe that the unavoidable impurity concid-wide.  plastics. 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 belief, as of the date listed in this form. Microchip Techn on the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract as the average weight of anticipated significant toxic metals of	d, to the best of the obtain a test to o	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot g material suppl aw material suppl	echnology bstance, if outer box tor devices puarantee the liers. uppliers.		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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via in  the chemical substance is absent from the list above, the chemical  protected's knowledge and belief as of the date of this docum  is not below the threshold of regulatory concern for any regulating 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.  oochip Technology Incorporated believes the information in the  eir original packing materials is true and correct to the best or  pleteness and accuracy of data in this form because it has be  pleteniformation is often protected from disclosure as trade se  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates or  mation is pr	y with EU Directive: ternal design contro al substance is NOT ent, there is no cred ulatory scheme worl ability standard for p stics/ are made from polyv his form concerning of its knowledge and een compiled based secrets and some in of these parts and th contained within sili tty, express or implic	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device am lible reason to believe that the unavoidable impurity conceld- wide.  plastics. You can access the UL iQTM family of databases  inyl chloride (PVC) plastic. "Window envelopes" used to he  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 proformation may not have been provided by subcontract as: eaverage weight of anticipated significant toxic metals of con devices (silicon IC) in the finished parts.	d, to the best of centration of the to obtain a tes mold the packin lincorporated's ology incorpor ovided by raw is semblers and romponents. The tation. The excl	of Microchip T e chemical sul st report at ing slip on the s semiconduct rated cannot c material suppl aw material si lesse estimates	echnology bstance, if outer box tor devices juarantee the liers. uppliers. i do not		Copper Palladium	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	
citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ipliance with the above EU Directives has been verified via in  themical substance is absent from the list above, the chemical  ipported's knowledge and belief as of the date of this docum  is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flamms  if 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.  ochip Technology Incorporated believes the information in the  ier original packing materials is true and correct to the best  pleteness and accuracy of data in this form because it has be  plier information is often protected from disclosure as trade  smation is provided only as estimates of the average weight code trace levels of dopants, metals, and non-metal materials on  ochip Technology Incorporated does not provide any warran  anties provided by Microchip Technology Incorporated and i	y with EU Directive: ternal design contro al substance is NOT ent, there is no cred ulatory scheme work ability standard for p stics/ are made from polyv his form concerning of its knowledge and een compiled based secrets and some in of these parts and the contained within sili ty, express or implie ts subsidiaries are of	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conculd- wide.  plastics. You can access the UL iQTM family of databases inyl chloride (PVC) plastic. "Window envelopes" used to he  substances restricted by RoHS in Microchip Technology delief, as of the date listed in this form. Microchip Techn on the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract as the average weight of anticipated significant toxic metals of condevices (silicon IC) in the finished parts.  ed, with respect to the information provided in this declara- contained in Microchip's standard terms and conditions of ent Declarations and shall not be liable for any damages, of	d, to the best of the to obtain a test of the packin lincorporated's ology Incorporovided by raw in semblers and romponents. The ation. The excliptation. The excliptation in the control of the packing	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot c material suppl raw material su lese estimates usive, limited re provided in ct, consequen	echnology bstance, if outer box tor devices juarantee the iers. uppliers. do not product Microchip's	0.05	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	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.2
citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pilance with the above EU Directives has been verified via in  themical substance is absent from the list above, the chemical  proprated's knowledge and belief as of the date of this docum  is not below the threshold of regulatory concern for any regulating 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.   ochip Technology Incorporated believes the information in the  information in the formation in the fireriginal packing materials is true and correct to the best  pleteness and accuracy of data in this form because it has be  plier information is often protected from disclosure as trade e  mation is provided only as estimates of the average weight or  det trace levels of dopants, metals, and non-metal materials of  ochip Technology Incorporated does not provide any warran  anties provided by Microchip Technology Incorporated and i  ations, sales order acknowledgement, and invoices.  ochip disclaims any duty to notify users of updates or chang  rwise, suffered by users or third parties as a result of the use	y with EU Directive: ternal design contro al substance is NOT ent, there is no cred ulatory scheme work ability standard for p stics/ are made from polyv his form concerning of its knowledge and een compiled based secrets and some in of these parts and the contained within sili ty, express or implie ts subsidiaries are of	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conculd- wide.  plastics. You can access the UL iQTM family of databases inyl chloride (PVC) plastic. "Window envelopes" used to he  substances restricted by RoHS in Microchip Technology delief, as of the date listed in this form. Microchip Techn on the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract as the average weight of anticipated significant toxic metals of condevices (silicon IC) in the finished parts.  ed, with respect to the information provided in this declara- contained in Microchip's standard terms and conditions of ent Declarations and shall not be liable for any damages, of	d, to the best of the to obtain a test of the packin lincorporated's ology Incorporovided by raw in semblers and romponents. The ation. The excliptation. The excliptation in the control of the packing	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot c material suppl raw material su lese estimates usive, limited re provided in ct, consequen	echnology bstance, if outer box tor devices juarantee the iers. uppliers. do not product Microchip's	0.05	Copper Palladium  (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 150°C for 1 hour	% of Total Weight  100  100.00  % of Total Weight  98  2  100.00  % of Total Weight  100.00	0.2

MSOP3x3 08 CuPd 3:10 PM : 5/2/2014

MICROCH	•••	ce Type: Pand PA 8 (Le	ad) PDIP (Small Outline300") (C4 / CK)		nation Base A				geneous Materials: g. pc boards, displays	·)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			"Contained In"	% Total			388.39	(mg) Total	Mold Compound	% ot Total Weight	79.8
	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm				70.00	
	Fused Silica Metal Hydro Oxide	60676-86-0 Trade Secret	Mold Compound  Mold Compound	57.456 8.778	279.638 42.723	574,560 87,780		Fused Silica Metal Hydro Oxide	60676-86-0 Trade Secret	72.00 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	i
	SiO2	14808-60-7	Mold Compound	1.995	9.710	19,950		SiO2	14808-60-7	2.50	i
	Carbon Black	1333-86-4	Mold Compound	0.399	1.942	3,990		Carbon Black	1333-86-4	0.50	1
	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	1
	Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87		Silver	7440-22-4	1.91	i
	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		
	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			7440-22-4	73.36	1
	Dicyandiamide	461-58-5	Die Attach	0.002	0.009	18		Epoxy Resir		14.67	1
	Silicon	7440-21-3	Chip (Die)	7.500	36.503	75,000			3101-60-8	7.33	i
<del>                                     </del>	Copper Palladium	7440-50-8 7440-05-3	Wire Bond palladium coated copper (CuPd)	0.197	0.956 0.017	1,965 35		Phenolic hardene		2.93 1.47	1
	Tin		Wire Bond palladium coated copper (CuPd)  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500		Amine type hardene Dicyandiamide		0.24	i
	1111	7440-31-3	TOTALS:	100.000	486.700	1,000,000		Dicyandiamide	Total	100.00	
			Total Mass	100.000	400.700	1,000,000	36.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
Directive 2002/53/E	EC (End-of-Life Vehicles (ELV) Directive	s comply with EU Directive 20 e).	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ctive) and with	n EU		Doped Silicon	7440-21-3	100	
If a chemical subst Incorporated's kno	stance is absent from the list above, the	chemical substance is NOT a document, there is no credib	, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce				0.97	(mg) Total	Wire Bond - Copper, palladium		
			wide.		cnemicai sui		0.97	(g) rotal	coated (CuPd)	% of Total Weight	0.2
	nds used by Microchip meet the UL94 V( al/eng/pages/offerings/industries/chemi		wide. stics. You can access the UL iQTM family of databases t	o obtain a tes		_	0.97	Copper		% of Total Weight	0.2
http://ul.com/globa The protective "tub	al/eng/pages/offerings/industries/chemi	icals/plastics/			t report at	-	0.97		coated (CuPd)		0.2
http://ul.com/globa The protective "tuk and certain "reels" Microchip Technol in their original pac completeness and Supplier informatic Information is prov	al/eng/pages/offerings/industries/chemi ibes" in which the specific product is sh " may be made from PVC plastic. logy Incorporated believes the informat acking materials is true and correct to th accuracy of data in this form because it ion is often protected from disclosure a: vided only as estimates of the average v	icals/plastics/ nipped are made from polyving tion in this form concerning since best of its knowledge and bit has been compiled based oils trade secrets and some infolloweight of these parts and the	stics. You can access the UL iQTM family of databases to	old the packin ncorporated's ology Incorpor vided by raw n emblers and ra	g slip on the of semiconduct ated cannot g naterial suppl aw material su	outer box or devices uarantee the iers. uppliers.	0.97	Copper	7440-50-8	98	0.2
http://ul.com/globa The protective "tub and certain "reels" Microchip Technol in their original pac completeness and Supplier informatic Information is prov include trace levels Microchip Technol warranties provide quotations, sales o	al/eng/pages/offerings/industries/chemi ibes" in which the specific product is sh " may be made from PVC plastic. ology Incorporated believes the informat acking materials is true and correct to the d accuracy of data in this form because is ion is often protected from disclosure avoided only as estimates of the average is sof dopants, metals, and non-metal may ology Incorporated does not provide any pled by Microchip Technology Incorporatorder acknowledgement, and invoices.	icals/plastics/ nipped are made from polyving tion in this form concerning si te best of its knowledge and bi it has been compiled based or is trade secrets and some info weight of these parts and the atterials contained within silico y warranty, express or implied ed and its subsidiaries are co	stics. You can access the UL iQTM family of databases of the Identified (PVC) plastic. "Window envelopes" used to he libstances restricted by RoHS in Microchip Technology lelief, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets prometion may not have been provided by subcontract assaverage weight of anticipated significant toxic metals connected to the respect to the information provided in this declarantained in Microchip's standard terms and conditions of	ncorporated's logy Incorpor vided by raw n emblers and r. mponents. Th tion. The exclusiale. These ar	semiconduct ated cannot g naterial suppl aw material su ese estimates usive, limited e provided in	outer box or devices uarantee the iers. uppliers. do not product Microchip's	6.08	Copper	7440-50-8 7440-05-3	98	1.25
http://ul.com/globa The protective "tuk and certain "reels" Microchip Technoli in their original pac completeness and Supplier informatic Information is prov include trace levels Microchip Technol warranties provide quotations, sales o Microchip disclaim otherwise, suffered	al/eng/pages/offerings/industries/chemi tibes" in which the specific product is sh "may be made from PVC plastic.  logy Incorporated believes the informat acking materials is true and correct to th d accuracy of data in this form because it on is often protected from disclosure avoided only as estimates of the average of ls of dopants, metals, and non-metal me ology Incorporated does not provide any ed by Microchip Technology Incorporate order acknowledgement, and invoices. In any duty to notify users of updates of	icals/plastics/ nipped are made from polyving tion in this form concerning so the best of its knowledge and be that has been compiled based on strade secrets and some infollowing that of these parts and the atterials contained within silicoty warranty, express or implied ed and its subsidiaries are coor changes to Material Content the users' reliance on the information of the content of the co	stics. You can access the UL iQTM family of databases of the Identified (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology lelief, as of the date listed in this form. Microchip Technot the ranges provided in Material Safety Data Sheets promation may not have been provided by subcontract assaverage weight of anticipated significant toxic metals con devices (silicon IC) in the finished parts.	ncorporated's ology Incorpor vided by raw n emblers and n mponents. Th tion. The exclusiale. These are	g slip on the of semiconduct ated cannot g naterial suppl aw material si ese estimates usive, limited e provided in tt, consequent	or devices uarantee the iers. do not product Microchip's		Copper	coated (CuPd)  7440-50-8  7440-05-3  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	98 2 100.00 4 100.00 4 100.00 4 100.00	
attp://ul.com/globa The protective "tuk Ind certain "reels" Alicrochip Technoli In their original pac Completeness and Supplier informatio Information is prov Include trace levels Alicrochip Technol Varranties provide Juotations, sales o Alicrochip disclaim Interwise, suffered	al/eng/pages/offerings/industries/chemi thes" in which the specific product is sh " may be made from PVC plastic.  Plogy Incorporated believes the informat acking materials is true and correct to th a accuracy of data in this form because ion is often protected from disclosure avided only as estimates of the average to soft on the state of the service of the servi	icals/plastics/ nipped are made from polyving tion in this form concerning so the best of its knowledge and but has been compiled based on strade secrets and some infollowing that of these parts and the atterials contained within silicoty warranty, express or implied ed and its subsidiaries are coor changes to Material Content the users' reliance on the infollowed.	stics. You can access the UL iQTM family of databases of the Identified (PVC) plastic. "Window envelopes" used to he abstances restricted by RoHS in Microchip Technology I ellef, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets promation may not have been provided by subcontract assaverage weight of anticipated significant toxic metals con devices (silicon IC) in the finished parts.  with respect to the information provided in this declarantained in Microchip's standard terms and conditions of Declarations and shall not be liable for any damages, di	ncorporated's ology Incorpor vided by raw n emblers and n mponents. Th tion. The exclusiale. These are	g slip on the of semiconduct ated cannot g naterial suppl aw material si ese estimates usive, limited e provided in tt, consequent	or devices uarantee the iers. do not product Microchip's		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	

PDIP300 08 CuPd 3:10 PM : 5/2/2014

MICROCHIP  Semiconductor Device Type:	SP 28 () and	SDDID 200% (M2 (MD)		nation Base A			Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
	SF 20 (Lead)	"Contained In"	% Total			1656.43	(mg) Total	Mold Compound	% ot Total Weight	79.35
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm				•	79.55
Fused Silica	60676-86-0	Mold Compound	57.132	1192.631	571,320	EME-GE800	Fused Silica	60676-86-0 Trade Secret	72.00 11.00	
Metal Hydro Oxide Epoxy Resin	Trade Secret Trade Secret	Mold Compound Mold Compound	8.729 5.555	182.207 115.950	87,285 55,545	4	Metal Hydro Oxide Epoxy Resin	Trade Secret Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.555	115.950	55,545		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.984	41.411	19,838		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.397	8.282	3,968		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame Tape	9.984	208.409	99,837			Total	100.00	
Iron	7439-89-6	Lead Frame Tape	0.246	5.126	2,456	218.14	(mg) Total	Lead Frame	% of Total Weight	10.45
Silver	7440-22-4	Lead Frame Tape	0.199	4.156	1,991	194+AG	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	
Polyimide Poly - ethylene – terephthalate	25038-81-7 25038-59-9	Lead Frame Tape Lead Frame Tape	0.215 0.190	4.488 3.966	2,150 1,900	-	Zinc Phosphorous	7440-66-6 7723-14-0	0.13	
NBR	9003-18-3	Lead Frame Tape	0.035	0.731	350	1	Priospriorous	7723-14-0 Total	100.00	
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	153-20-5 / 9016-8	Lead Frame Tape	0.030	0.626	300	Tape	Polyimide	25038-81-7	43.00	0.5
Silver	7440-22-4	Die Attach	0.550	11.485	5,502		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	3101-60-8	Die Attach	0.055	1.148	550		Bismaleimide	79922-55-7	6.00	
Phenolic hardener	Trade secret	Die Attach	0.022	0.459	220		Phenol resin	28453-20-5 / 9016-83-5	6.00	
Amine type hardener	827-43-0	Die Attach	0.011	0.230	110			Total	100.00	-
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	CRM-1064L	Silver	7440-22-4	73.36	
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	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250 100.000	26.094 2.087.500	12,500 1.000.000		Phenolic hardener	Trade secret 827-43-0	2.93 1.47	
	0.0075	TOTALS:	100.000	2,087.500	1,000,000		Amine type hardener			
		g Total Mass					Dicyandiamide	461-58-5 <b>Total</b>	0.24	
his semiconductor device and its homogenous materials comply wi irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via interna		, ,	TO Recust Direct	ouve, and with	20	156.56	Total (mg)	Chip (Die)		7.5
a chemical substance is absent from the list above, the chemical su ncorporated'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 credi		d to the best o					Chip (Die)	% of Total Weight	
		l-wide.					Doped Silicon	7440-21-3	% of Total Weight	
Iolding compounds used by Microchip meet the UL94 V0 flammabilit			entration of the	chemical sul			Doped Silicon	,		
lolding compounds used by Microchip meet the UL94 V0 flammabilit ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastic: he protective "tubes" in which the specific product is shipped are m nd certain "reels" may be made from PVC plastic.	:s/	lastics. You can access the UL iQTM family of databases t	entration of the	chemical sul	bstance, if	4.18	Doped Silicon	7440-21-3  Total  Wire Bond palladium coated	100	0.2
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics he protective "tubes" in which the specific product is shipped are m	nade from polyving form concerning is knowledge and compiled based of the same some infects and some infects and some infects and the same parts and the	lastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to his substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets proprovided in the safety Data Sheets proprovided by subcontract asset average weight of anticipated significant toxic metals co	to obtain a test nold the packing Incorporated's ology Incorpor you'ded by raw n semblers and ra	e chemical sul t report at g slip on the semiconduct ated cannot g naterial suppl aw material si	outer box tor devices guarantee the liers. uppliers.			7440-21-3 Total Wire Bond	100	0.2
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plasticithe protective "tubes" in which the specific product is shipped are m nd certain "reels" may be made from PVC plastic.  Ilicrochip Technology Incorporated believes the information in this for their original packing materials is true and correct to the best of its ompleteness and accuracy of data in this form because it has been cupplier information is often protected from disclosure as trade secretormation is provided only as estimates of the average weight of the	nade from polyving form concerning is knowledge and compiled based of ets and some infects and some infects and some infects and the tained within silicexpress or implied	lastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets provided in may not have been provided by subcontract asse a verage weight of anticipated significant toxic metals co con devices (silicon IC) in the finished parts.  d, with respect to the information provided in this declara	entration of the to obtain a test nold the packing Incorporated's ology Incorporovided by raw n semblers and rapponents. The ation. The exclusion of the call of t	t report at g slip on the semiconduct ated cannot cated cannot cated cannot eater al suppl aw material si ese estimates usive, limited	outer box tor devices guarantee the iers. uppliers. do not		(mg) Total	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)	100.00  100.00  % of Total Weight	0.2
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics the protective "tubes" in which the specific product is shipped are m nd certain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the information in this for their original packing materials is true and correct to the best of its ompleteness and accuracy of data in this form because it has been of supplier information is often protected from disclosure as trade secre information is provided only as estimates of the average weight of the licrochip Technology Incorporated does not provide any warranty, e varranties provided by Microchip Technology Incorporated and its st	is/ made from polyvii form concerning: s knowledge and compiled based of ets and some infi- esse parts and the tained within silic express or implie ubsidiaries are co to Material Conterio	lastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets proormation may not have been provided by subcontract asses average weight of anticipated significant toxic metals co con devices (silicon 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 Declarations and shall not be liable for any damages, dinterest in the substance of the standard terms and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the date of the provided in the substance of the provided in the substance of the provided in the p	entration of the to obtain a test nold the packing incorporated's ology incorporated by raw n semblers and rapmonents. The action. The exclustion. The exclustion in the case are direct or indirect or indirect	t report at g slip on the semiconduct atted cannot g naterial suppl aw material si ese estimates usive, limited re provided in	outer box tor devices guarantee the iers. do not product Microchip's		(mg) Total  Copper	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)  7440-50-8  Total	100 100.00 % of Total Weight	0.2
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastic:  the protective "tubes" in which the specific product is shipped are m  nd certain "reels" may be made from PVC plastic.  ticrochip Technology Incorporated believes the information in this for  their original packing materials is true and correct to the best of its  ompleteness and accuracy of data in this form because it has been of  supplier information is often protected from disclosure as trade secre  information is provided only as estimates of the average weight of the  clude trace levels of dopants, metals, and non-metal materials cont- ticrochip Technology Incorporated does not provide any warranty, exarranties provided by Microchip Technology Incorporated and its su  uotations, sales order acknowledgement, and invoices.  licrocchip disclaims any duty to notify users of updates or changes to  therwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise.	is/ made from polyvii form concerning: s knowledge and compiled based of ets and some infi- esse parts and the tained within silic express or implie ubsidiaries are co to Material Conterio	lastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets proormation may not have been provided by subcontract asses average weight of anticipated significant toxic metals co con devices (silicon 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 Declarations and shall not be liable for any damages, dinterest in the substance of the standard terms and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the date of the provided in the substance of the provided in the substance of the provided in the p	entration of the to obtain a test nold the packing incorporated's ology incorporated by raw n semblers and rapmonents. The action. The exclustion. The exclustion in the case are direct or indirect or indirect	t report at g slip on the semiconduct atted cannot g naterial suppl aw material si ese estimates usive, limited re provided in	outer box tor devices guarantee the iers. do not product Microchip's		(mg) Total  Copper	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)  7440-50-8	100  100.00  % of Total Weight  98	0.2
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastic:  the protective "tubes" in which the specific product is shipped are m  nd certain "reels" may be made from PVC plastic.  ticrochip Technology Incorporated believes the information in this for  their original packing materials is true and correct to the best of its  ompleteness and accuracy of data in this form because it has been of  supplier information is often protected from disclosure as trade secre  information is provided only as estimates of the average weight of the  clude trace levels of dopants, metals, and non-metal materials cont- ticrochip Technology Incorporated does not provide any warranty, exarranties provided by Microchip Technology Incorporated and its su  uotations, sales order acknowledgement, and invoices.  licrocchip disclaims any duty to notify users of updates or changes to  therwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise.	is/ made from polyvii form concerning: s knowledge and compiled based of ets and some infi- esse parts and the tained within silic express or implie ubsidiaries are co to Material Conterio	lastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets proormation may not have been provided by subcontract asses average weight of anticipated significant toxic metals co con devices (silicon 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 Declarations and shall not be liable for any damages, dinterest in the substance of the standard terms and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the date of the provided in the substance of the provided in the substance of the provided in the p	entration of the to obtain a test nold the packing incorporated's ology incorporated by raw n semblers and rapmonents. The action. The exclustion. The exclustion in the case are direct or indirect or indirect	t report at g slip on the semiconduct atted cannot g naterial suppl aw material si ese estimates usive, limited re provided in	outer box tor devices guarantee the iers. do not product Microchip's		(mg) Total  Copper  Palladium	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)  7440-50-8  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100  100.00  % of Total Weight  98  2	1.25

SPDIP300 28 CuPd 3:10 PM : 5/2/2014

AICROCHIP	Turner CA - SN	00 - (000)		nation Base A	. ,			geneous Materials: . pc boards, displays	)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: OA and SN	08 (Lead) (SOIC) (Small Outline -150mil) (C2)  "Contained In"	% Total							63
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		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	7440-66-6	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			Total	100.00	<u>u</u>
Modified Amine	827-43-0	Die Attach	0.026	0.020	263	0.59	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	5.850	75,000		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)	0.004	0.003	35		Diglycidylether 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	827-43-0	4	
	7440 01 0	Flating on external leads (pins) - Watte Fin7 annealed at 150 C for Finding					Wodilled Allillie			<u>I</u>
		TOTAL C.	100 000							
		TOTALS:	100.000	78.000	1,000,000	5.85	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV	omply with EU Directive Directive).	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH			, ,	5.85	Total (mg)  Doped Silicon		% of Total Weight	7.5
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV 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	omply with EU Directive Directive). ria internal design contr emical substance is NO ocument, there is no cre	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.  If an intentional ingredient in the semiconductor device and dible reason to believe that the unavoidable impurity conce	IS Recast Dire	ective, without	excemption)	0.16		Chip (Die) 7440-21-3	% of Total Weight	7.5
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV 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 ing compounds used by Microchip meet the UL94 V0 fli	omply with EU Directive Directive).  ia internal design contremical substance is NO cument, there is no cre regulatory scheme wo	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.  If an intentional ingredient in the semiconductor device and dible reason to believe that the unavoidable impurity conce	IS Recast Dire	ective, without of Microchip T e chemical sub	excemption)		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium	% of Total Weight 100 100.00	7.5
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV pliance with the above EU Directives has been verified with the above EU Directives has been verified with the second of the date of the second of the date of this does not below the threshold of regulatory concern for any thing compounds used by Microchip meet the UL94 V0 fl: //ul.com/global/eng/pages/offerings/industries/chemical	omply with EU Directive of Directive). ia internal design contr emical substance is NO ocument, there is no cre regulatory scheme wo ummability standard for s/plastics/	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.  If an intentional ingredient in the semiconductor device and dible reason to believe that the unavoidable impurity conceild-wide.	IS Recast Dire	ective, without  of Microchip T  e chemical sub	excemption) echnology postance, if		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight 100 100.00 % of Total Weight	7.5
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SOIC150 08 CuPd 3:10 PM : 5/2/2014

3:10 PM : 5/2/2014

MICROCHIP  Semiconductor Device	Type: SO & OI 28 S	SOIC (300mil) (N3 / NN)		aation 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	614.78	(mg) Total	Mold Compound	% ot Total Weight	t 79.8
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	t 10.5
Silver	7440-22-4	Lead Frame	0.200	1.541	2,000	00.00	Copper	7440-50-8	95.54	1
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	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.027	35	3.70	Silver (Aq)	7440-22-4	80	7 0.75
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	9.630	12.500		Acrylate Urethane Oligome		20	
1111	7440-31-3	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour TOTALS:	100.000	770.400	1.000.000		Acrylate Orethane Oligonie	Total		<u></u>
			100.000	770.400	1,000,000					
		Total Mass				57.78	Total (mg)	Chip (Die)	% of Total Weight	t 7.5
nis semiconductor device and its homogenous materials of rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive 20	102/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol	HS Recast Dire	ctive) and witl	h EU		Doped Silicon	7440-21-3	100	
ompliance with the above EU Directives has been verified v	ria internal design controls	s, supplier declarations, and /or analytical test data.						Total	100.00	)
a chemical substance is absent from the list above, the cha acorporated's knowledge and belief as of the date of this do ny, is not below the threshold of regulatory concern for any	cument, there is no credit	ole reason to believe that the unavoidable impurity conc				1.54	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	t 0.2
olding compounds used by Microchip meet the UL94 V0 fla ttp://ul.com/global/eng/pages/offerings/industries/chemical		astics. You can access the UL iQTM family of databases	to obtain a tes	t report at			Copper	7440-50-8	98	
he protective "tubes" in which the specific product is shipp nd certain "reels" may be made from PVC plastic.	oed are made from polyvin	yl chloride (PVC) plastic. "Window envelopes" used to h	old the packin	g slip on the	outer box		Palladium	7440-05-3	2	
								Total	100.00	<u> </u>
icrochip Technology Incorporated believes the information their original packing materials is true and correct to the be ompleteness and accuracy of data in this form because it h upplier information is often protected from disclosure as tr formation is provided only as estimates of the average wei iclude trace levels of dopants, metals, and non-metal mater	est of its knowledge and be as been compiled based o ade secrets and some info ght of these parts and the	pelief, as of the date listed in this form. Microchip Techn n the ranges provided in Material Safety Data Sheets pro rimation may not have been provided by subcontract as: average weight of anticipated significant toxic metals or	ology Incorpor ovided by raw r semblers and r	ated cannot g naterial suppl aw material su	juarantee the liers. uppliers.			100	3000	
icrochip Technology Incorporated does not provide any wa arranties provided by Microchip Technology Incorporated uotations, sales order acknowledgement, and invoices.						9.63	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	t 1.25
icrochip disclaims any duty to notify users of updates or c therwise, suffered by users or third parties as a result of the this Certificate of Compliance for semiconductor products	users' reliance on the inf						Tin	7440-31-5	100.00	
this Certificate of Compliance for Semiconductor products					I					

SOIC300 28 CuPd

1ICROCHIP				nation Base / pper Alloy (C				geneous Materials: . pc boards, displays	;)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Devic	ce Type: SM 08 (Lead)	SOIJ (Small Outline-208 mil) (C3) "Contained In"	% Total						1	
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	1
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			Total	100.00	1
Iron	7439-89-6	Lead Frame	0.247	0.307	2,468	13.06	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.249	2,000	10.00	Copper	7440-50-8	95.54	1
Zinc	7440-66-6	Lead Frame	0.200	0.016	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.010	87		Silver	7440-22-4	1.91	
Silver (Aq)	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		Тиоорногодо	Total		1
Modified Amine	827-43-0	Die Attach	0.026	0.070	263	0.93	(mg) Total	Die Attach	% of Total Weight	
Silicon	7440-21-3	Chip (Die)	7.500	9.330	75.000	0.93		7440-22-4		0.75
							Silver (Ag)		75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197 0.004	0.244	1,965		Modified Epoxy Resin iglycidylether of bisphenol-F	13561-08-5	14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)		0.004	35	D		54208-63-8	8	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.555	12,500		Modified Amine	827-43-0		
		TOTALS:	100.000	124.400	1,000,000			Total		
					1,000,000			Total	100.00	
		Total Mass				9.33	Total (mg)	Chip (Die)	% of Total Weight	
	s comply with EU Directive 20					9.33	Total (mg)  Doped Silicon			
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive	s comply with EU Directive 20 ).	Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol				9.33		Chip (Die)	% of Total Weight	7.5
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	s comply with EU Directive 20 ). Indivia internal design controls chemical substance is NOT a document, there is no credib	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 an le reason to believe that the unavoidable impurity conc	HS Recast Dire	ective) and with	h EU	9.33		Chip (Die) 7440-21-3	% of Total Weight	7.5
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 a ling compounds used by Microchip meet the UL94 VO	s comply with EU Directive 20 ).  Id via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- O flammability standard for pla	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 an le reason to believe that the unavoidable impurity conc	HS Recast Dire	ective) and with of Microchip T e chemical sul	h EU		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium	% of Total Weight 100 100.00	7.5
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 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 VG: "//ul.com/global/eng/pages/offerings/industries/chemi- protective "tubes" in which the specific product is sh	s comply with EU Directive 20 ).  Id via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- 0 flammability standard for pla cals/plastics/	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 an le reason to believe that the unavoidable impurity concivide.	d, to the best of the obtain a test	of Microchip T e chemical sul	h EU echnology bstance, 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	7.5
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 rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a diling compounds used by Microchip meet the UL94 Volucom/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is should be a substantial to the specific product is should be a substantial to the specific product is should be a substantial to the specific product is should be a substantial to the specific product is should be a substantial to the specific product is should be a substantial to the sub	s comply with EU Directive 20 ).  Id via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- 0 flammability standard for pla cals/plastics/	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 an le reason to believe that the unavoidable impurity concivide.  Institute:  1. State of the semiconductor device and le reason to believe that the unavoidable impurity concivide.	d, to the best of the obtain a test	of Microchip T e chemical sul	h EU echnology bstance, if		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	0.2
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  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 Vo  "//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.  rochip Technology Incorporated believes the informat  teir original packing materials is true and correct to  the pleteness and accuracy of data in this form because in  pleteness and accuracy of data in this form because in  provided only as estimates of the average  we  remain in provided only as estimates of the average  we  consider the constance of the average we  constance of the server  constance of the constance  constance of the constance  constance of the constance  constanc	s comply with EU Directive 20 ). d via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- 10 flammability standard for pla cals/plastics/ iipped are made from polyvin; ion in this form concerning s te best of its knowledge and b it has been compiled based o is trade secrets and some info weight of these parts and the	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 an le reason to believe that the unavoidable impurity conc- wide.  stics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to be ubstances restricted by RoHS in Microchip Technology lelief, as of the date listed in this form. Microchip Techn in the ranges provided in Material Safety Data Sheets pro rmation may not have been provided by subcontract as average weight of anticipated significant toxic metals or	d, to the best of the obtain a test and the packing th	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot g material suppl aw material suppl	echnology bstance, if outer box tor devices puarantee the iers.		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	0.2
inctive 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 a ding compounds used by Microchip meet the UL94 Vo.://ul.com/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is shorterian "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the informat neir original packing materials is true and correct to the pleteness and accuracy of data in this form because in plier information is often protected from disclosure as plier information is provided only as estimates of the average wude trace levels of dopants, metals, and non-metal materochip Technology Incorporated does not provide any	s comply with EU Directive 20 ). d via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- off fammability standard for pla cals/plastics/ sipped are made from polyving tion in this form concerning s the best of its knowledge and b it has been compiled based o strade secrets and some info weight of these parts and the tterials contained within silico	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 an le reason to believe that the unavoidable impurity conc- wide.  stics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to be ubstances restricted by RoHS in Microchip Technology lelief, as of the date listed in this form. Microchip Techn in the ranges provided in Material Safety Data Sheets pro rmation may not have been provided by subcontract as average weight of anticipated significant toxic metals or	d, to the best of centration of the to obtain a test and the packin lincorporated's ology Incorporated by raw semblers and tomponents. The ation. The exclation.	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot c material suppl raw material suppl raw material suppl suese estimates	echnology bstance, if outer box tor devices juarantee the iers. uppliers. do not		Doped Silicon  (mg) Total  Copper  Palladium	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	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive, pliance with the above EU Directives has been verified the microstate of the above the protested 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 Vol./ful.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shocertain "reels" may be made from PVC plastic.  Ochip Technology Incorporated believes the informate iri original packing materials is true and correct to the pleteness and accuracy of data in this form because in olier information is often protected from disclosure as mation is provided only as estimates of the average we detrace levels of dopants, metals, and non-metal materials of the provided only as estimates of the provide any anties provided by Microchip Technology Incorporate ations, sales order acknowledgement, and invoices.	s comply with EU Directive 20 ).  d via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- of fammability standard for pla cals/plastics/ sipped are made from polyving ion in this form concerning s the best of its knowledge and b it has been compiled based or strade secrets and some info weight of these parts and the tetrials contained within silico warranty, express or implied and its subsidiaries are co or changes to Material Content the users' reliance on the inf	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 an le reason to believe that the unavoidable impurity conc- wide.  Istics. 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 lelief, as of the date listed in this form. Microchip Techn in the ranges provided in Material Safety Data Sheets pr mation may not have been provided by subcontract as average weight of anticipated significant toxic metals of an devices (silicon IC) in the finished parts.  , with respect to the information provided in this declar.	d, to the best of the to obtain a test of the packir lincorporated's ology incorpo ovided by raw semblers and imponents. The action. The excit f sale. These a	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot g material suppl raw material su lese estimates	echnology bstance, if outer box tor devices juarantee the liers. uppliers. ido not product Microchip's	0.25	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 150°C for	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.2

SOIC208 08 CiPd 3:10 PM : 5/2/2014

MICROCHIP  Semiconductor Device 1		05 (Lead) SOT-23 (C7)		nation Base A	. ,			geneous Materials: . pc boards, displays	)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	7,	"Contained In"	% Total							
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		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 13561-08-5	Die Attach Die Attach	0.563	0.090	5,625 1.050		Zinc Phosphorous	7440-66-6 7723-14-0	0.13 0.08	
Modified Epoxy Resin							Phosphorous	7723-14-0 Total		
Diglycidylether of bisphenol-F Modified Amine	54208-63-8 827-43-0	Die Attach Die Attach	0.056	0.009	563 263	0.12	() T-1-1	Die Attach	% of Total Weight	0.75
						0.12	(mg) Total			0.75
Silicon Copper	7440-21-3 7440-50-8	Chip (Die) Wire Bond palladium coated copper (CuPd)	7.500 0.197	1.200 0.031	75,000 1.965		Silver (Ag) Modified Epoxy Resin	7440-22-4 13561-08-5	75 14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)  Wire Bond palladium coated copper (CuPd)	0.004	0.001	35	Dia	lycidylether 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	0.200	12,500	Dig	Modified Amine	827-43-0	4	
1111	7440 01 0	TOTALS:	100.000	16.000	1,000,000		modinod 7 minio	Total	100.00	
	0.0160	g Total Mass		.0.000	1,000,000	1.20	Total (mg)	Chip (Die)	% of Total Weight	7.5
his semiconductor device and its homogenous materials co irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verified vi		, , ,	HS Recast Dire	ctive) and witl	h EU		Doped Silicon	7440-21-3 Total	100	
f a chemical substance is absent from the list above, the cher ncorporated's knowledge and belief as of the date of this dot any, is not below the threshold of regulatory concern for any	cument, there is no cred	lible reason to believe that the unavoidable impurity conce				0.03	(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
Molding compounds used by Microchip meet the UL94 V0 flan http://ul.com/global/eng/pages/offerings/industries/chemicals		plastics. You can access the UL iQTM family of databases	to obtain a tes	t report at			Copper	7440-50-8	98	
he protective "tubes" in which the specific product is shipp	ed are made from polyvi	inyl chloride (PVC) plastic. "Window envelopes" used to h	old the nackin	a slin on the	outer box					
			ioid the packing	g 0p 0o			Palladium	7440-05-3	2	
and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information n their original packing materials is true and correct to the be	est of its knowledge and	substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techn	Incorporated's	semiconduct	juarantee the		Palladium	7440-05-3 Total	-	
and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information	est of its knowledge and as been compiled based ade secrets and some in ght of these parts and th	substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract asse a werage weight of anticipated significant toxic metals co	Incorporated's ology Incorporovided by raw r semblers and r	s semiconduct rated cannot g naterial suppl aw material su	juarantee the iers. uppliers.		Palladium		-	
and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information in their original packing materials is true and correct to the be completeness and accuracy of data in this form because it ha supplier information is often protected from disclosure as tranformation is provided only as estimates of the average weig	est of its knowledge and as been compiled based ade secrets and some inf ght of these parts and th als contained within sili- urranty, express or implie	substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets proformation may not have been provided by subcontract asse average weight of anticipated significant toxic metals cocon devices (silicon IC) in the finished parts.  ed, with respect to the information provided in this declarate.	Incorporated's ology Incorpor ovided by raw resemblers and romponents. The action. The excl	s semiconduct rated cannot g material suppl aw material su ese estimates	guarantee the iers. uppliers. do not	0.20	(mg) Total		-	1.25
nd certain "reels" may be made from PVC plastic.  licrochip Technology Incorporated believes the information their original packing materials is true and correct to the be mpleteness and accuracy of data in this form because it ha upplier information is often protected from disclosure as tra formation is provided only as estimates of the average weig clude trace levels of dopants, metals, and non-metal materi.  licrochip Technology Incorporated does not provide any wa rarranties provided by Microchip Technology Incorporated a	est of its knowledge and as been compiled based ade secrets and some inf inject of these parts and the als contained within sili- urranty, express or implie and its subsidiaries are contained to the part of the ananges to Material Conte a users' reliance on the li	substances restricted by RoHS in Microchip Technology id belief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets proformation may not have been provided by subcontract asse average weight of anticipated significant toxic metals coron devices (silicon IC) in the finished parts.  ed, with respect to the information provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in the this declaracontained in this declaracontained in this declaraconta	Incorporated's ology incorpor ovided by raw in semblers and romponents. The tation. The excliption is also incorporate and inc	s semiconduct rated cannot g naterial suppl aw material si ese estimates usive, limited re provided in	juarantee the iers. uppliers. do not product Microchip's	0.20	(mg) Total	Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100.00	1.25

SOT23 05 CuPd 3:10 PM : 5/2/2014

MICROCHIP  Semiconductor Device Typ	De: CH and OT (	16 (Lead) SOT-23 (C8)		aation Base A oper Alloy (C				ogeneous Materials: g. pc boards, displays	)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			13.57	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	13.57	(mg) rotai	wola Compouna	% of 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			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	
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 / Handana	Polymeric Retanning Agent	Die Attach	0.019	0.003	188			Total	100.00	
Curing / Hardener			7.500					1		
Silicon	7440-21-3	Chip (Die)		1.275	75,000	0.13	(mg) Total	Die Attach	% of Total Weight	0.75
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.033	1,965		Epoxy resin	Trade Secret	75	
Palladium Tin	7440-05-3 7440-31-5	Wire Bond palladium coated copper (CuPd)  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.001	35 12,500		Silicon dioxide Curing / Hardener	7631-86-9 Trade Secret	23	
III	7440-31-5						Curing / Hardener	Total	3 100.00	
		TOTALS:	100.000	17.000	1,000,000	1.28	Total (mg)	Chip (Die)	% of Total Weight	7.5
pliance with the above EU Directives has been verified via in	ternal design control	s, supplier declarations, and /or analytical test data.						Total	100.00	l
chemical substance is absent from the list above, the chemical proprated's knowledge and belief as of the date of this docum , is not below the threshold of regulatory concern for any regu	ent, there is no credi	ble reason to believe that the unavoidable impurity conce				0.03	(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
ding compounds used by Microchip meet the UL94 V0 flammatilul.com/global/eng/pages/offerings/industries/chemicals/pla		lastics. You can access the UL iQTM family of databases	to obtain a tes	t report at			Copper	7440-50-8	98	
protective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic.	ıre made from polyvir	nyl chloride (PVC) plastic. "Window envelopes" used to h	old the packir	g slip on the	outer box		Palladium	7440-05-3	2	
ochin Technology Incorporated believes the information in the	his form concerning	substances restricted by RoHS in Microchin Technology	Incorporated's	semiconduct	tor devices			Total	100.00	
crochip Technology Incorporated believes the information in their original packing materials is true and correct to the best on pleteness and accuracy of data in this form because it has be obtained information is often protected from disclosure as trade is ormation is provided only as estimates of the average weight of tude trace levels of dopants, metals, and non-metal materials or	of its knowledge and een compiled based of secrets and some info of these parts and the contained within silic hty, express or implied	belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets pro ormation may not have been provided by subcontract assess average weight of anticipated significant toxic metals coon devices (silicon IC) in the finished parts.  d, with respect to the information provided in this declara	ology Incorporated by raw is semblers and romponents. The action. The excl	ated cannot g naterial suppl aw material su ese estimates usive, limited	guarantee the liers. uppliers. do not product	0.21	(mg) Total	Plating on external leads (pins) - Matte Tin		1 25
neir original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has be pleteness and accuracy of data in this form because it has be plier information is often protected from disclosure as trade a rmation is provided only as estimates of the average weight of detailed the control of the average weight of the control of the control of the average weight of the control of the control of the average weight of the control of the control of the average weight of the control	of its knowledge and een compiled based of secrets and some info fof these parts and the contained within silic hty, express or implied its subsidiaries are co ges to Material Conter	belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets pro ormation may not have been provided by subcontract assess average weight of anticipated significant toxic metals co con devices (silicon 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 Declarations and shall not be liable for any damages, d	ology Incorpo ovided by raw i semblers and r imponents. Th ation. The excl i sale. These a	ated cannot g naterial suppl aw material su ese estimates usive, limited e provided in	guarantee the liers. uppliers. do not product Microchip's	0.21	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 11 hour	% of Total Weight	1.25
neir original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has plier information is often protected from disclosure as trade or tradition is provided only as estimates of the average weight of ude trace levels of dopants, metals, and non-metal materials of the provided only as estimates.	of its knowledge and een compiled based of secrets and some info fof these parts and the contained within silic hty, express or implied its subsidiaries are co ges to Material Conter	belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets pro ormation may not have been provided by subcontract assess average weight of anticipated significant toxic metals co con devices (silicon 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 Declarations and shall not be liable for any damages, d	ology Incorpo ovided by raw i semblers and r imponents. Th ation. The excl i sale. These a	ated cannot g naterial suppl aw material su ese estimates usive, limited e provided in	guarantee the liers. uppliers. do not product Microchip's	0.21	(mg) Total Tin	Plating on external leads (pins) - Matte Tin / annealed at 150°C for		1.25

SOT23 06 CuPd 3:10 PM : 5/2/2014

ICROCHIP  Semiconductor Device	Type: PT 44 (Lead)	TQFP 10x10x1mm (T4/TY)		nation Base / pper Alloy (C	. ,		Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
	71	"Contained In"	% Total			040.00	() T-1-I	M-14.04	0/ -4 T-4-13W-1-b4	70.0
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	218.09	(mg) Total	Mold Compound	% ot Total Weight	79.8
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	100.00	1
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	0.047	0.029	105		Silver	7440-02-0	1.67	
	7439-95-4	Die Attach	0.600	1.640	6,000		Silicon	7440-22-4	0.45	
Silver (Ag)										
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	General	20	
				070 000	1.000.000			Total	100.00	1
		TOTALS:	100.000	273.300				iotai		
		g Total Mass			,,,,,,,	20.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH			,,,,,,,	20.50	Total (mg)  Doped Silicon		% of Total Weight	
a 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Ince with the above EU Directives has been verified vehicles with the same of the characteristic substance is absent from the list above, the character's knowledge and belief as of the date of this doot below the threshold of regulatory concern for any	omply with EU Directive in internal design control of the internal design control of the internal design control of the internal design in internal design internal design in internal design internal desi	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conceld-wide.	S Recast Dire	ective) and with of Microchip T e chemical sul	h EU	20.50		Chip (Die) 7440-21-3	% of Total Weight	-
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified vemical substance is absent from the list above, the che rated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any g compounds used by Microchip meet the UL94 V0 flate.	omply with EU Directive : ria internal design contro emical substance is NOT cument, there is no cred r regulatory scheme worl ammability standard for p	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  Pls, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conce	S Recast Dire	ective) and with of Microchip T e chemical sul	h EU		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond palladium coated	% of Total Weight 100 100.00	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified vertical substance is absent from the list above, the chorated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any ag compounds used by Microchip meet the UL94 Vo fla. Il.com/global/eng/pages/offerings/industries/chemical otective "tubes" in which the specific product is shipp	omply with EU Directive : ria internal design control emical substance is NOT occument, there is no cred or regulatory scheme worl ammability standard for p s/plastics/	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conceld-wide.	S Recast Dire	ective) and with of Microchip T e chemical sul	h EU echnology bstance, if		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd)	% of Total Weight 100 100.00 % of Total Weight	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified vemical substance is absent from the list above, the chorated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for anying compounds used by Microchip meet the UL94 V0 file. Locm/global/eng/pages/offerings/industries/chemical otective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.	omply with EU Directive :  ria internal design control  emical substance is NOT  ocument, there is no cred  regulatory scheme worl  ammability standard for p  s/plastics/  bed are made from polyvi  in this form concerning  sest of its knowledge and  as been compiled based  adde secrets and some in  ght of these parts and th	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conce  id-wide.  olastics. You can access the UL iQTM family of databases to  inyl chloride (PVC) plastic. "Window envelopes" used to he  substances restricted by RoHS in Microchip Technology I  belief, as of the date listed in this form. Microchip Techno  on the ranges provided by RoHS in Microchip Subcontract ass  e average weight of anticipated significant toxic metals co	S Recast Dire  I, to the best of intration of the coordinates a coordinate of the coordinates of the coordin	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot g material suppl 'aw material suppl	echnology bstance, if outer box tor devices puarantee the liers.		Doped Silicon  (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	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified value in the list above, the cheorated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any geompounds used by Microchip meet the UL94 V0 flavul.com/global/eng/pages/offerings/industries/chemical rotective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information ir original packing materials is true and correct to the beleteness and accuracy of data in this form because it hier information is often protected from disclosure as that in the information is often protected from disclosure structure in the internation is provided only as estimates of the average weight the process of the structure of the control of the control of the provided only as estimates of the average weight the process of the control of the provided only as estimates of the average weight in the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimated the provided and the provided only as estimated the provided and t	omply with EU Directive in internal design control internal design internal de	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conce  id-wide.  olastics. You can access the UL iQTM family of databases to  inyl chloride (PVC) plastic. "Window envelopes" used to he  substances restricted by RoHS in Microchip Technology I  belief, as of the date listed in this form. Microchip Techno  on the ranges provided by RoHS in Microchip Subcontract ass  e average weight of anticipated significant toxic metals co	S Recast Dire  I, to the best of ntration of the oobtain a test old the packir encorporated's logy Incorpor wided by raw imponents. The tion. The excl	of Microchip T e chemical sul st report at ing slip on the s semiconduct rated cannot of material suppl raw material suppl raw	echnology bstance, if outer box tor devices juarantee the iers. uppliers. do not		Doped Silicon  (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	
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 not below the threshold of regulatory concern for any ag compounds used by Microchip meet the UL94 V0 fla il.com/global/eng/pages/offerings/industries/chemical otective "tubes" in which the specific product is shipp rtain "reels" may be made from PVC plastic.  Thip Technology Incorporated believes the information original packing materials is true and correct to the b eteness and accuracy of data in this form because it h er information is often protected from disclosure as traiton is provided only as estimates of the average wei e trace levels of dopants, metals, and non-metal mater  hip Technology Incorporated does not provide any wa ties provided by Microchip Technology Incorporated i sons, sales order acknowledgement, and invoices.  hip disclaims any duty to notify users of updates or cl	omply with EU Directive : ria internal design control emical substance is NOT occument, there is no cred regulatory scheme worl ammability standard for p s/plastics/ oed are made from polyvi in this form concerning eest of its knowledge and as been compiled based ade secrets and some in ght of these parts and th ials contained within sili arranty, express or implicand its subsidiaries are c hanges to Material Conte e users' reliance on the i	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conce id-wide.  olastics. You can access the UL iQTM family of databases to inyl chloride (PVC) plastic. "Window envelopes" used to he  substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract ass e average weight of anticipated significant toxic metals co con devices (silicon IC) in the finished parts.	S Recast Dire	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot c material suppl aw material supe see estimates usive, limited re provided in ct, consequen	h EU echnology bstance, if  outer box tor devices juarantee the iers. do not  product Microchip's	0.55	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 /annealed at 150°C for	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.2

TQFP10x10 44 CuPd 3:10 PM : 5/2/2014

Semiconductor Device Type:	PT	64 (Lead) TQFP 10x10x1mm (V2/VG)		nation Base A pper Alloy (C	.,		Package Hom	ogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total	_		228.79	(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	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	
Phenolic Resin	Trade Secret	Mold Compound	4.078	11.691	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.709	2,474		Carbon Black	1333-86-4	0.31	
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		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.135	473		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.047	0.135	105		Silver	7440-02-0	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.600	1.720	6.000		Silicon	7440-22-4	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.600	0.430	1,500		Magnesium	7440-21-3	0.45	
, ,							iviagnesium	7439-95-4 Total		
Silicon	7440-21-3	Chip (Die)	7.500	21.503	75,000				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	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.584	12,500		Acrylate Urethane Oligon		20	
		TOTALS:	100.000	286.700	1,000,000			Total	100.00	•
	0 2867 (	Total Mass				21.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
s semiconductor device and its homogenous materials comply vective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			IS Recast Dire	ctive) and witl	n EU		Doped Silicon	7440-21-3	100	
npliance with the above EU Directives has been verified via inter	nal design control									
		s, supplier declarations, and /or analytical test data.						Total	100.00	
chemical substance is absent from the list above, the chemical proprated's knowledge and belief as of the date of this documen	substance is NOT a	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce				0.57	(mg) Total	Total Wire Bond palladium coated copper (CuPd)	100.00 % of Total Weight	0.2
. chemical substance is absent from the list above, the chemical sopporated's knowledge and belief as of the date of this documen , is not below the threshold of regulatory concern for any regulading compounds used by Microchip meet the UL94 V0 flammabi	substance is NOT a t, there is no credii ttory scheme world ility standard for pl	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce -wide.	entration of the	chemical sub		0.57	(mg) Total	Wire Bond palladium coated		0.2
chemical substance is absent from the list above, the chemical corporated's knowledge and belief as of the date of this documen, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammabios://ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are	substance is NOT a t, there is no credil ttory scheme world ility standard for pl ics/	in intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce- wide. astics. You can access the UL iQTM family of databases	entration of the	chemical sub	ostance, if	0.57	, ,	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2
chemical substance is absent from the list above, the chemical corporated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regular iding compounds used by Microchip meet the UL94 V0 flammabing://ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are did certain "reels" may be made from PVC plastic.	substance is NOT a t, there is no credii ttory scheme world ility standard for pl ics/ made from polyvir	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce- wide. astics. You can access the UL iQTM family of databases by chloride (PVC) plastic. "Window envelopes" used to h	entration of the	e chemical sub t report at g slip on the o	ostance, if	0.57	Copper	Wire Bond palladium coated copper (CuPd) 7440-50-8	% of Total Weight	0.2
chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this documen , is not below the threshold of regulatory concern for any regula Iding compounds used by Microchip meet the UL94 V0 flammabip://ul.com/global/eng/pages/offerings/industries/chemicals/plastie protective "tubes" in which the specific product is shipped are deratin "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the information in this heir original packing materials is true and correct to the best of impleteness and accuracy of data in this form because it has been polier information is often protected from disclosure as trade secondation is provided only as estimates of the average weight of	substance is NOT at, there is no creditory scheme world ility standard for plics/ made from polyvir form concerning at the knowledge and a compiled based a crets and some infehese parts and the	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases by chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets progration may not have been provided by subcontract ass average weight of anticipated significant toxic metals co	entration of the to obtain a test old the packin incorporated's blogy Incorpor vided by raw remblers and r	e chemical sub t report at g slip on the of semiconduct ated cannot g naterial suppl aw material su	outer box or devices uarantee the iers. uppliers.	0.57	Copper	Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	% of Total Weight  98	0.2
chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this documen, is not below the threshold of regulatory concern for any regular liding compounds used by Microchip meet the UL94 V0 flammabio: //ul.com/globa/leng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are didertain "reels" may be made from PVC plastic.  Prochip Technology Incorporated believes the information in this heir original packing materials is true and correct to the best of impleteness and accuracy of data in this form because it has been pipiler information is often protected from disclosure as trade secondation is provided only as estimates of the average weight of t lude trace levels of dopants, metals, and non-metal materials controlled to the provide only incorporated does not provide any warranty, trranties provided by Microchip Technology Incorporated and its	substance is NOT: t, there is no creditory scheme world litty standard for pl cs/ made from polyvir form concerning sts knowledge and n compiled based crets and some infehese parts and the ntained within silic express or implier	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases by chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology is belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets provination may not have been provided by subcontract ass average weight of anticipated significant toxic metals co on devices (silicon IC) in the finished parts.	ntration of the to obtain a tes old the packin incorporated's ology Incorpor vided by raw i emblers and r mponents. Th	t report at g slip on the c semiconduct ated cannot g naterial suppl aw material se see estimates usive, limited	outer box or devices uarantee the iers. do not	0.57 3.58	Copper	Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	% of Total Weight  98	1.25
chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this documen , is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammabip://ul.com/global/eng/pages/offerings/industries/chemicals/plastip protective "tubes" in which the specific product is shipped are	substance is NOT: t, there is no creditory scheme world litty standard for pl cs/ made from polyvir form concerning sts knowledge and n compiled based crets and some infehese parts and the ntained within silic express or implies subsidiaries are co	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases by chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology is belief, as of the date listed in this form. Microchip Technol in the ranges provided in Material Safety Data Sheets profundton may not have been provided by subcontract ass 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 declarantained in Microchip's standard terms and conditions of at Declarations and shall not be liable for any damages, dat Declarations and shall not be liable for any damages, dat	entration of the to obtain a tes old the packin incorporated's ology Incorpor vided by raw remblers and remponents. The tion. The excl sale. These are irect or indirect or indirect	t report at g slip on the of the semiconduct atted cannot gnaterial supplay material suese estimates usive, limited re provided in the consequent	outer box or devices uarantee the iers. uppliers. do not product Microchip's		Copper	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	% of Total Weight  98  2  100.00	
chemical substance is absent from the list above, the chemical corporated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regulated in the company of t	substance is NOT: t, there is no creditory scheme world litty standard for pl cs/ made from polyvir form concerning sts knowledge and n compiled based crets and some infehese parts and the ntained within silic express or implies subsidiaries are co	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases by chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology is belief, as of the date listed in this form. Microchip Technol in the ranges provided in Material Safety Data Sheets profundton may not have been provided by subcontract ass 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 declarantained in Microchip's standard terms and conditions of at Declarations and shall not be liable for any damages, dat Declarations and shall not be liable for any damages, dat	entration of the to obtain a tes old the packin incorporated's ology Incorpor vided by raw remblers and remponents. The tion. The excl sale. These are irect or indirect or indirect	t report at g slip on the of the semiconduct atted cannot gnaterial supplay material suese estimates usive, limited re provided in the consequent	outer box or devices uarantee the iers. uppliers. do not product Microchip's		Copper Palladium  (mg) 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	% of Total Weight  98  2  100.00  % of Total Weight	

TQFP10x10 64 CuPd 3:10 PM : 5/2/2014

Semiconductor Device Typ	e: MS and IIA	8 (Lead) MSOP 3x3mm (A3)		nation Base / pper Alloy (C				geneous Materials: . pc boards, displays	·)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Typ	e. WS and GA	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	20.43	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	17.755	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	1.567	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	1.044	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.063	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314			Total		
Iron	7439-89-6	Lead Frame	0.247	0.063	2,468	2.69	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.051	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.003	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.144	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.027	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.014	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.007	263	0.19	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75,000		Silver (Ag)	7440-22-4	75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.050	1,965		Modified Epoxy Resin	13561-08-5	14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.001	35	Di	glycidylether 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	0.320	12,500		Modified Amine	827-43-0	4	
	•	TOTALS:	100.000	25.600	4 000 000				100.00	•
		IUIALS:	100.000	25.600	1,000,000			Total	100.00	
semiconductor device and its homogenous materials compl titve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).		g Total Mass				1.92	Total (mg)  Doped Silicon	Total Chip (Die) 7440-21-3	% of Total Weight	7.5
	y with EU Directive	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol				1.92		Chip (Die)	% of Total Weight	7.5
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 chemical  porated's knowledge and belief as of the date of this docum	y with EU Directive of ternal design control al substance is NOT tent, there is no cred	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device an fible reason to believe that the unavoidable impurity conce	HS Recast Dire	ective) and with	h EU	0.05		Chip (Die) 7440-21-3	% of Total Weight	7.5
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	y with EU Directive in ternal design control al substance is NOT ent, there is no credulatory scheme work ability standard for p	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and tible reason to believe that the unavoidable impurity concide-wide.	HS Recast Dire	ective) and with of Microchip T e chemical sul	h EU		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium	% 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 themical substance is absent from the list above, the chemicar prorated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flamma	y with EU Directive of ternal design control al substance is NOT ent, there is no credulatory scheme workability standard for pastics/	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device an ilible reason to believe that the unavoidable impurity concid- wide.  plastics. You can access the UL iQTM family of databases	d, to the best centration of the	of Microchip T e chemical sul	h EU echnology bstance, 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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive), ipliance with the above EU Directives has been verified via in the characteristic state of this above, the chemical substance is absent from the list above, the chemical reporated's knowledge and belief as of the date of this docum is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flamma: //ul.com/global/eng/pages/offerings/industries/chemicals/plaprotective "tubes" in which the specific product is shipped a	y with EU Directive: ternal design contro al substance is NOT ent, there is no cred ulatory scheme worl ability standard for p stics/ are made from polyv his form concerning of its knowledge and een compiled based seen compiled based in these parts and the	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device am lible reason to believe that the unavoidable impurity concid-wide.  plastics. 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 belief, as of the date listed in this form. Microchip Techn on the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract as the average weight of anticipated significant toxic metals of	d, to the best of the obtain a test to o	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot g material suppl aw material suppl	echnology bstance, if outer box tor devices puarantee the liers. uppliers.		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	
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pliance with the above EU Directives has been verified via in  the chemical substance is absent from the list above, the chemical  protected's knowledge and belief as of the date of this docum  is not below the threshold of regulatory concern for any regulating 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.  oochip Technology Incorporated believes the information in the  eir original packing materials is true and correct to the best or  pleteness and accuracy of data in this form because it has be  pleteniformation is often protected from disclosure as trade se  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates of the average weight or  mation is provided only as estimates or  mation is pr	y with EU Directive: ternal design contro al substance is NOT ent, there is no cred ulatory scheme worl ability standard for p stics/ are made from polyv his form concerning of its knowledge and een compiled based secrets and some in of these parts and th contained within sili tty, express or implic	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device am lible reason to believe that the unavoidable impurity conceld- wide.  plastics. You can access the UL iQTM family of databases  inyl chloride (PVC) plastic. "Window envelopes" used to he  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 proformation may not have been provided by subcontract as: eaverage weight of anticipated significant toxic metals of con devices (silicon IC) in the finished parts.	d, to the best of centration of the to obtain a tes mold the packin lincorporated's ology incorpor ovided by raw is semblers and romponents. The tation. The excl	of Microchip T e chemical sul st report at ing slip on the s semiconduct rated cannot c material suppl aw material si lesse estimates	echnology bstance, if outer box tor devices juarantee the liers. uppliers. i do not		Copper Palladium	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	
citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  ipliance with the above EU Directives has been verified via in  themical substance is absent from the list above, the chemical  ipported's knowledge and belief as of the date of this docum  is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flamms  if 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.  ochip Technology Incorporated believes the information in the  ier original packing materials is true and correct to the best  pleteness and accuracy of data in this form because it has be  plier information is often protected from disclosure as trade  smation is provided only as estimates of the average weight code trace levels of dopants, metals, and non-metal materials on  ochip Technology Incorporated does not provide any warran  anties provided by Microchip Technology Incorporated and i	y with EU Directive: ternal design contro al substance is NOT ent, there is no cred ulatory scheme work ability standard for p stics/ are made from polyv his form concerning of its knowledge and een compiled based secrets and some in of these parts and the contained within sili ty, express or implie ts subsidiaries are of	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conculd- wide.  plastics. You can access the UL iQTM family of databases inyl chloride (PVC) plastic. "Window envelopes" used to he  substances restricted by RoHS in Microchip Technology delief, as of the date listed in this form. Microchip Techn on the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract as the average weight of anticipated significant toxic metals of condevices (silicon IC) in the finished parts.  ed, with respect to the information provided in this declara- contained in Microchip's standard terms and conditions of ent Declarations and shall not be liable for any damages, of	d, to the best of the to obtain a test of the packin lincorporated's ology Incorporovided by raw in semblers and romponents. The ation. The excliptation. The excliptation in the control of the packing	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot c material suppl raw material su lese estimates usive, limited re provided in ct, consequen	echnology bstance, if outer box tor devices juarantee the iers. uppliers. do not product Microchip's	0.05	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	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.2
citive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  pilance with the above EU Directives has been verified via in  themical substance is absent from the list above, the chemical  proprated's knowledge and belief as of the date of this docum  is not below the threshold of regulatory concern for any regulating 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.   ochip Technology Incorporated believes the information in the  information in the formation in the fireriginal packing materials is true and correct to the best  pleteness and accuracy of data in this form because it has be  plier information is often protected from disclosure as trade e  mation is provided only as estimates of the average weight or  det trace levels of dopants, metals, and non-metal materials of  ochip Technology Incorporated does not provide any warran  anties provided by Microchip Technology Incorporated and i  ations, sales order acknowledgement, and invoices.  ochip disclaims any duty to notify users of updates or chang  rwise, suffered by users or third parties as a result of the use	y with EU Directive: ternal design contro al substance is NOT ent, there is no cred ulatory scheme work ability standard for p stics/ are made from polyv his form concerning of its knowledge and een compiled based secrets and some in of these parts and the contained within sili ty, express or implie ts subsidiaries are of	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conculd- wide.  plastics. You can access the UL iQTM family of databases inyl chloride (PVC) plastic. "Window envelopes" used to he  substances restricted by RoHS in Microchip Technology delief, as of the date listed in this form. Microchip Techn on the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract as the average weight of anticipated significant toxic metals of condevices (silicon IC) in the finished parts.  ed, with respect to the information provided in this declara- contained in Microchip's standard terms and conditions of ent Declarations and shall not be liable for any damages, of	d, to the best of the to obtain a test of the packin lincorporated's ology Incorporovided by raw in semblers and romponents. The ation. The excliptation. The excliptation in the control of the packing	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot c material suppl raw material su lese estimates usive, limited re provided in ct, consequen	echnology bstance, if outer box tor devices juarantee the iers. uppliers. do not product Microchip's	0.05	Copper Palladium  (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 150°C for 1 hour	% of Total Weight  100  100.00  % of Total Weight  98  2  100.00  % of Total Weight  100.00	0.2

MSOP3x3 08 CuPd 3:10 PM : 5/2/2014

MICROCH	• • • • • • • • • • • • • • • • • • • •	ce Type: Pand PA 8 (Le	ad) PDIP (Small Outline300") (C4 / CK)		nation Base A				geneous Materials: g. pc boards, displays	·)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			"Contained In"	% Total			388.39	(mg) Total	Mold Compound	% ot Total Weight	79.8
	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm				70.00	
	Fused Silica Metal Hydro Oxide	60676-86-0 Trade Secret	Mold Compound  Mold Compound	57.456 8.778	279.638 42.723	574,560 87,780		Fused Silica Metal Hydro Oxide	60676-86-0 Trade Secret	72.00 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	i
	SiO2	14808-60-7	Mold Compound	1.995	9.710	19,950		SiO2	14808-60-7	2.50	i
	Carbon Black	1333-86-4	Mold Compound	0.399	1.942	3,990		Carbon Black	1333-86-4	0.50	1
	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	1
	Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87		Silver	7440-22-4	1.91	i
	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		
	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			7440-22-4	73.36	1
	Dicyandiamide	461-58-5	Die Attach	0.002	0.009	18		Epoxy Resir		14.67	1
	Silicon	7440-21-3	Chip (Die)	7.500	36.503	75,000			3101-60-8	7.33	i
<del>                                     </del>	Copper Palladium	7440-50-8 7440-05-3	Wire Bond palladium coated copper (CuPd)	0.197	0.956 0.017	1,965 35		Phenolic hardene		2.93 1.47	1
	Tin		Wire Bond palladium coated copper (CuPd)  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500		Amine type hardene Dicyandiamide		0.24	i
	1111	7440-31-3	TOTALS:	100.000	486.700	1,000,000		Dicyandiamide	Total	100.00	
			Total Mass	100.000	400.700	1,000,000	36.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
Directive 2002/53/E	EC (End-of-Life Vehicles (ELV) Directive	s comply with EU Directive 20 e).	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Dire	ctive) and with	n EU		Doped Silicon	7440-21-3	100	
If a chemical subst Incorporated's kno	stance is absent from the list above, the	chemical substance is NOT a document, there is no credib	, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce				0.97	(mg) Total	Wire Bond - Copper, palladium		
			wide.		cnemicai sui		0.97	(g) rotal	coated (CuPd)	% of Total Weight	0.2
	nds used by Microchip meet the UL94 V( al/eng/pages/offerings/industries/chemi		wide. stics. You can access the UL iQTM family of databases t	o obtain a tes		_	0.97	Copper		% of Total Weight	0.2
http://ul.com/globa The protective "tub	al/eng/pages/offerings/industries/chemi	icals/plastics/			t report at	-	0.97		coated (CuPd)		0.2
http://ul.com/globa The protective "tuk and certain "reels" Microchip Technol in their original pac completeness and Supplier informatic Information is prov	al/eng/pages/offerings/industries/chemi ibes" in which the specific product is sh " may be made from PVC plastic. logy Incorporated believes the informat acking materials is true and correct to th accuracy of data in this form because it ion is often protected from disclosure a: vided only as estimates of the average v	icals/plastics/ nipped are made from polyving tion in this form concerning since best of its knowledge and bit has been compiled based oils trade secrets and some infolloweight of these parts and the	stics. You can access the UL iQTM family of databases to	old the packin ncorporated's ology Incorpor vided by raw n emblers and ra	g slip on the of semiconduct ated cannot g naterial suppl aw material su	outer box or devices uarantee the iers. uppliers.	0.97	Copper	7440-50-8	98	0.2
http://ul.com/globa The protective "tub and certain "reels" Microchip Technol in their original pac completeness and Supplier informatic Information is prov include trace levels Microchip Technol warranties provide quotations, sales o	al/eng/pages/offerings/industries/chemi ibes" in which the specific product is sh " may be made from PVC plastic. ology Incorporated believes the informat acking materials is true and correct to the d accuracy of data in this form because is ion is often protected from disclosure avoided only as estimates of the average is sof dopants, metals, and non-metal may ology Incorporated does not provide any pled by Microchip Technology Incorporatorder acknowledgement, and invoices.	icals/plastics/ nipped are made from polyving tion in this form concerning si te best of its knowledge and bi it has been compiled based or is trade secrets and some info weight of these parts and the atterials contained within silico y warranty, express or implied ed and its subsidiaries are co	stics. You can access the UL iQTM family of databases of the Identified (PVC) plastic. "Window envelopes" used to he libstances restricted by RoHS in Microchip Technology lelief, as of the date listed in this form. Microchip Technology in the ranges provided in Material Safety Data Sheets prometion may not have been provided by subcontract assaverage weight of anticipated significant toxic metals connected to the respect to the information provided in this declarantained in Microchip's standard terms and conditions of	ncorporated's logy Incorpor vided by raw n emblers and r. mponents. Th tion. The exclusiale. These ar	semiconduct ated cannot g naterial suppl aw material su ese estimates usive, limited e provided in	outer box or devices uarantee the iers. uppliers. do not product Microchip's	6.08	Copper	7440-50-8 7440-05-3	98	1.25
http://ul.com/globa The protective "tuk and certain "reels" Microchip Technoli in their original pac completeness and Supplier informatic Information is prov include trace levels Microchip Technol warranties provide quotations, sales o Microchip disclaim otherwise, suffered	al/eng/pages/offerings/industries/chemi tibes" in which the specific product is sh "may be made from PVC plastic.  logy Incorporated believes the informat acking materials is true and correct to th d accuracy of data in this form because it on is often protected from disclosure avoided only as estimates of the average of ls of dopants, metals, and non-metal me ology Incorporated does not provide any ed by Microchip Technology Incorporate order acknowledgement, and invoices. In any duty to notify users of updates of	icals/plastics/ nipped are made from polyving tion in this form concerning so the best of its knowledge and but has been compiled based on strade secrets and some infollowing that of these parts and the atterials contained within silicoty warranty, express or implied ed and its subsidiaries are coor changes to Material Content the users' reliance on the infollowed.	stics. You can access the UL iQTM family of databases of the Identified (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology lelief, as of the date listed in this form. Microchip Technot the ranges provided in Material Safety Data Sheets promation may not have been provided by subcontract assaverage weight of anticipated significant toxic metals con devices (silicon IC) in the finished parts.	ncorporated's ology Incorpor vided by raw n emblers and n mponents. Th tion. The exclusiale. These are	g slip on the of semiconduct ated cannot g naterial suppl aw material si ese estimates usive, limited e provided in tt, consequent	or devices uarantee the iers. do not product Microchip's		Copper	coated (CuPd)  7440-50-8  7440-05-3  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	98 2 100.00 4 100.00 4 100.00 4 100.00	
attp://ul.com/globa The protective "tuk Ind certain "reels" Alicrochip Technoli In their original pac Completeness and Supplier informatio Information is prov Include trace levels Alicrochip Technol Varranties provide Juotations, sales o Alicrochip disclaim Interwise, suffered	al/eng/pages/offerings/industries/chemi thes" in which the specific product is sh " may be made from PVC plastic.  Plogy Incorporated believes the informat acking materials is true and correct to th a accuracy of data in this form because ion is often protected from disclosure avided only as estimates of the average to soft on the state of the service of the servi	icals/plastics/ nipped are made from polyving tion in this form concerning so the best of its knowledge and but has been compiled based on strade secrets and some infollowing that of these parts and the atterials contained within silicoty warranty, express or implied ed and its subsidiaries are coor changes to Material Content the users' reliance on the infollowed.	stics. You can access the UL iQTM family of databases of the Identified (PVC) plastic. "Window envelopes" used to he abstances restricted by RoHS in Microchip Technology I ellef, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets promation may not have been provided by subcontract assaverage weight of anticipated significant toxic metals con devices (silicon IC) in the finished parts.  with respect to the information provided in this declarantained in Microchip's standard terms and conditions of Declarations and shall not be liable for any damages, di	ncorporated's ology Incorpor vided by raw n emblers and n mponents. Th tion. The exclusiale. These are	g slip on the of semiconduct ated cannot g naterial suppl aw material si ese estimates usive, limited e provided in tt, consequent	or devices uarantee the iers. do not product Microchip's		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	

PDIP300 08 CuPd 3:10 PM : 5/2/2014

MICROCHIP  Semiconductor Device Type:	SP 28 () and	SDDID 200% (M2 (MD)		nation Base A			Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
	SF 20 (Lead)	"Contained In"	% Total			1656.43	(mg) Total	Mold Compound	% ot Total Weight	79.35
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm				•	79.55
Fused Silica	60676-86-0	Mold Compound	57.132	1192.631	571,320	EME-GE800	Fused Silica	60676-86-0 Trade Secret	72.00 11.00	
Metal Hydro Oxide Epoxy Resin	Trade Secret Trade Secret	Mold Compound Mold Compound	8.729 5.555	182.207 115.950	87,285 55,545	4	Metal Hydro Oxide Epoxy Resin	Trade Secret Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.555	115.950	55,545		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.984	41.411	19,838		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.397	8.282	3,968		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame Tape	9.984	208.409	99,837			Total	100.00	
Iron	7439-89-6	Lead Frame Tape	0.246	5.126	2,456	218.14	(mg) Total	Lead Frame	% of Total Weight	10.45
Silver	7440-22-4	Lead Frame Tape	0.199	4.156	1,991	194+AG	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	
Polyimide Poly - ethylene – terephthalate	25038-81-7 25038-59-9	Lead Frame Tape Lead Frame Tape	0.215 0.190	4.488 3.966	2,150 1,900	-	Zinc Phosphorous	7440-66-6 7723-14-0	0.13	
NBR	9003-18-3	Lead Frame Tape	0.035	0.731	350	1	Priospriorous	7723-14-0 Total	100.00	
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	153-20-5 / 9016-8	Lead Frame Tape	0.030	0.626	300	Tape	Polyimide	25038-81-7	43.00	0.5
Silver	7440-22-4	Die Attach	0.550	11.485	5,502		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	3101-60-8	Die Attach	0.055	1.148	550		Bismaleimide	79922-55-7	6.00	
Phenolic hardener	Trade secret	Die Attach	0.022	0.459	220		Phenol resin	28453-20-5 / 9016-83-5	6.00	
Amine type hardener	827-43-0	Die Attach	0.011	0.230	110			Total	100.00	-
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	CRM-1064L	Silver	7440-22-4	73.36	
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	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250 100.000	26.094 2.087.500	12,500 1.000.000		Phenolic hardener	Trade secret 827-43-0	2.93 1.47	
	0.0075	TOTALS:	100.000	2,087.500	1,000,000		Amine type hardener			
		g Total Mass					Dicyandiamide	461-58-5 <b>Total</b>	0.24	
his semiconductor device and its homogenous materials comply wi irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via interna		, ,	TO Recust Direct	ouve, and with	20	156.56	Total (mg)	Chip (Die)		7.5
a chemical substance is absent from the list above, the chemical su ncorporated'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 credi		d to the best o					Chip (Die)	% of Total Weight	
		l-wide.					Doped Silicon	7440-21-3	% of Total Weight	
Iolding compounds used by Microchip meet the UL94 V0 flammabilit			entration of the	chemical sul			Doped Silicon	,		
lolding compounds used by Microchip meet the UL94 V0 flammabilit ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastic: he protective "tubes" in which the specific product is shipped are m nd certain "reels" may be made from PVC plastic.	:s/	lastics. You can access the UL iQTM family of databases t	entration of the	chemical sul	bstance, if	4.18	Doped Silicon	7440-21-3  Total  Wire Bond palladium coated	100	0.2
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics he protective "tubes" in which the specific product is shipped are m	nade from polyving form concerning is knowledge and compiled based of the same some infects and some infects and some infects and the same parts and the	lastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to his substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets proprovided in the safety Data Sheets proprovided by subcontract asset average weight of anticipated significant toxic metals co	to obtain a test nold the packing Incorporated's ology Incorpor you'ded by raw n semblers and ra	e chemical sul t report at g slip on the semiconduct ated cannot g naterial suppl aw material si	outer box tor devices guarantee the liers. uppliers.			7440-21-3 Total Wire Bond	100	0.2
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plasticithe protective "tubes" in which the specific product is shipped are m nd certain "reels" may be made from PVC plastic.  Ilicrochip Technology Incorporated believes the information in this for their original packing materials is true and correct to the best of its ompleteness and accuracy of data in this form because it has been cupplier information is often protected from disclosure as trade secretormation is provided only as estimates of the average weight of the	nade from polyving form concerning is knowledge and compiled based of ets and some infects and some infects and some infects and the tained within silicexpress or implied	lastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets provided in may not have been provided by subcontract asse a verage weight of anticipated significant toxic metals co con devices (silicon IC) in the finished parts.  d, with respect to the information provided in this declara	entration of the to obtain a test nold the packing Incorporated's ology Incorporovided by raw n semblers and rapponents. The ation. The exclusion of the call of t	t report at g slip on the semiconduct ated cannot cated cannot cated cannot eater al suppl aw material si ese estimates usive, limited	outer box tor devices guarantee the iers. uppliers. do not		(mg) Total	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)	100.00  100.00  % of Total Weight	0.2
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics the protective "tubes" in which the specific product is shipped are m nd certain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the information in this for their original packing materials is true and correct to the best of its ompleteness and accuracy of data in this form because it has been of supplier information is often protected from disclosure as trade secre information is provided only as estimates of the average weight of the licrochip Technology Incorporated does not provide any warranty, e varranties provided by Microchip Technology Incorporated and its st	is/ made from polyvii form concerning: s knowledge and compiled based of ets and some infi- esse parts and the tained within silic express or implie ubsidiaries are co to Material Conterio	lastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets proormation may not have been provided by subcontract asses average weight of anticipated significant toxic metals co con devices (silicon 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 Declarations and shall not be liable for any damages, dinterest in the substance of the standard terms and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the date of the provided in the substance of the provided in the substance of the provided in the p	entration of the to obtain a test nold the packing incorporated's ology incorporated by raw n semblers and rapmonents. The action. The exclustion. The exclustion in the case are direct or indirect or indirect	t report at g slip on the semiconduct atted cannot g naterial suppl aw material si ese estimates usive, limited re provided in	outer box tor devices guarantee the iers. do not product Microchip's		(mg) Total  Copper	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)  7440-50-8  Total	100 100.00 % of Total Weight	0.2
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastic:  the protective "tubes" in which the specific product is shipped are m  nd certain "reels" may be made from PVC plastic.  ticrochip Technology Incorporated believes the information in this for  their original packing materials is true and correct to the best of its  ompleteness and accuracy of data in this form because it has been of  supplier information is often protected from disclosure as trade secre  information is provided only as estimates of the average weight of the  clude trace levels of dopants, metals, and non-metal materials cont- ticrochip Technology Incorporated does not provide any warranty, exarranties provided by Microchip Technology Incorporated and its su  uotations, sales order acknowledgement, and invoices.  licrocchip disclaims any duty to notify users of updates or changes to  therwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise.	is/ made from polyvii form concerning: s knowledge and compiled based of ets and some infi- esse parts and the tained within silic express or implie ubsidiaries are co to Material Conterio	lastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets proormation may not have been provided by subcontract asses average weight of anticipated significant toxic metals co con devices (silicon 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 Declarations and shall not be liable for any damages, dinterest in the substance of the standard terms and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the date of the provided in the substance of the provided in the substance of the provided in the p	entration of the to obtain a test nold the packing incorporated's ology incorporated by raw n semblers and rapmonents. The action. The exclustion. The exclustion in the case are direct or indirect or indirect	t report at g slip on the semiconduct atted cannot g naterial suppl aw material si ese estimates usive, limited re provided in	outer box tor devices guarantee the iers. do not product Microchip's		(mg) Total  Copper	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)  7440-50-8	100  100.00  % of Total Weight  98	0.2
ttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastic:  the protective "tubes" in which the specific product is shipped are m  nd certain "reels" may be made from PVC plastic.  ticrochip Technology Incorporated believes the information in this for  their original packing materials is true and correct to the best of its  ompleteness and accuracy of data in this form because it has been of  supplier information is often protected from disclosure as trade secre  information is provided only as estimates of the average weight of the  clude trace levels of dopants, metals, and non-metal materials cont- ticrochip Technology Incorporated does not provide any warranty, exarranties provided by Microchip Technology Incorporated and its su  uotations, sales order acknowledgement, and invoices.  licrocchip disclaims any duty to notify users of updates or changes to  therwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise, suffered by users or third parties as a result of the users'  retherwise.	is/ made from polyvii form concerning: s knowledge and compiled based of ets and some infi- esse parts and the tained within silic express or implie ubsidiaries are co to Material Conterio	lastics. You can access the UL iQTM family of databases to myl chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets proormation may not have been provided by subcontract asses average weight of anticipated significant toxic metals co con devices (silicon 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 Declarations and shall not be liable for any damages, dinterest in the substance of the standard terms and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the Declarations and shall not be liable for any damages, dinterest and conditions of the date of the provided in the substance of the provided in the substance of the provided in the p	entration of the to obtain a test nold the packing incorporated's ology incorporated by raw n semblers and rapmonents. The action. The exclustion. The exclustion in the case are direct or indirect or indirect	t report at g slip on the semiconduct atted cannot g naterial suppl aw material si ese estimates usive, limited re provided in	outer box tor devices guarantee the iers. do not product Microchip's		(mg) Total  Copper  Palladium	7440-21-3  Total  Wire Bond palladium coated copper (CuPd)  7440-50-8  Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100  100.00  % of Total Weight  98  2	1.25

SPDIP300 28 CuPd 3:10 PM : 5/2/2014

AICROCHIP	Turner CA - SN	00 - (000)		nation Base A	. ,			geneous Materials: . pc boards, displays	)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: OA and SN	08 (Lead) (SOIC) (Small Outline -150mil) (C2)  "Contained In"	% Total							63
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		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	7440-66-6	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			Total	100.00	<u>u</u>
Modified Amine	827-43-0	Die Attach	0.026	0.020	263	0.59	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	5.850	75,000		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)	0.004	0.003	35		Diglycidylether 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	827-43-0	4	
	7440 01 0	Flating on external leads (pins) - Watte Fin7 annealed at 150 C for 1 flour					Wodilled Allillie			<u>I</u>
		TOTAL C.	100 000							
		TOTALS:	100.000	78.000	1,000,000	5.85	Total (mg)	Total Chip (Die)	100.00 % of Total Weight	
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV	omply with EU Directive Directive).	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH			, ,	5.85	Total (mg)  Doped Silicon		% of Total Weight	7.5
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV 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	omply with EU Directive Directive). ria internal design contr emical substance is NO ocument, there is no cre	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.  If an intentional ingredient in the semiconductor device and dible reason to believe that the unavoidable impurity conce	IS Recast Dire	ective, without	excemption)	0.16		Chip (Die) 7440-21-3	% of Total Weight	7.5
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV 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 ing compounds used by Microchip meet the UL94 V0 fli	omply with EU Directive Directive).  ia internal design contremical substance is NO cument, there is no cre regulatory scheme wo	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.  If an intentional ingredient in the semiconductor device and dible reason to believe that the unavoidable impurity conce	IS Recast Dire	ective, without of Microchip T e chemical sub	excemption)		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium	% of Total Weight 100 100.00	7.5
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV pliance with the above EU Directives has been verified with the above EU Directives has been verified with the second of the date of the second of the date of this does not below the threshold of regulatory concern for any thing compounds used by Microchip meet the UL94 V0 fl: //ul.com/global/eng/pages/offerings/industries/chemical	omply with EU Directive of Directive). ia internal design contr emical substance is NO ocument, there is no cre regulatory scheme wo ummability standard for s/plastics/	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.  If an intentional ingredient in the semiconductor device and dible reason to believe that the unavoidable impurity conceild-wide.	IS Recast Dire	ective, without  of Microchip T  e chemical sub	excemption) echnology postance, if		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight 100 100.00 % of Total Weight	7.5
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV pliance with the above EU Directives has been verified with the above EU Directives has been verified with the state of this dois not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL94 Vo flufful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipt certain "reels" may be made from PVC plastic.  cochip Technology Incorporated believes the information eir original packing materials is true and correct to the Is pleteness and accuracy of data in this form because it helter information is often protected from disclosure as tr	omply with EU Directive in Directive. Directive in Direct	Og Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  ols, supplier declarations, and /or analytical test data.  I an intentional ingredient in the semiconductor device and dible reason to believe that the unavoidable impurity conce rid-wide.  plastics. You can access the UL iQTM family of databases to  vinyl chloride (PVC) plastic. "Window envelopes" used to h  g substances restricted by RoHS in Microchip Technology I  d belief, as of the date listed in this form. Microchip Technology I  d on the ranges provided in Material Safety Data Sheets pro  formation may not have been provided by subcontract ass he average weight of anticipated significant toxic metals co	Is Recast Directly to the best of the best	of Microchip T e chemical substrated as st report at ng slip on the of s semiconduct rated cannot g material suppl raw material suppl	excemption) echnology ostance, if outer box or devices puarantee the iers.		Opped 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	0.2
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV pliance with the above EU Directives has been verified with the above EU Directives has been verified with the above EU Directives has been verified with the series of the date of this do is not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL94 Vo flu/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is ship certain "reels" may be made from PVC plastic.  The productive series in which the specific product is ship certain "reels" may be made from PVC plastic.  The plateness and accuracy of data in this form because it holler information is often protected from disclosure as trimation is provided only as estimates of the average weig de trace levels of dopants, metals, and non-metal mater cochip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices.	omply with EU Directive Directive). Directive Directive). The control of the cont	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  ols, supplier declarations, and /or analytical test data.  If an intentional ingredient in the semiconductor device and dible reason to believe that the unavoidable impurity conce rid-wide.  plastics. You can access the UL iQTM family of databases to rinyl chloride (PVC) plastic. "Window envelopes" used to he g substances restricted by RoHS in Microchip Technology I d belief, as of the date listed in this form. Microchip Technology I d on the ranges provided in Material Safety Data Sheets pro information may not have been provided by subcontract ass he average weight of anticipated significant toxic metals co licon devices (silicon IC) in the finished parts.	is Recast Direction of the to obtain a test old the packin direction of the to obtain a test old the packin direction of the to obtain a test old the packin direction of the total the packin direction of the total direction of th	of Microchip T e chemical substance at report at seemiconduct rated cannot ge material supplicate material supplicate material supplicate material supplicate material supplicate material supplicate material substance estimates	excemption)  echnology ostance, if  outer box  for devices puarantee the iers. uppliers. do not  product Microchip's		Opped Silicon  (mg) Total  Copper  Palladium	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	0.2
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV ppliance with the above EU Directives has been verified with the above the chromated'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 flu/ful.com/global/eng/pages/offerings/industries/chemical protective "tubes" in which the specific product is shipp certain "reels" may be made from PVC plastic.  Ochip Technology Incorporated believes the information eir original packing materials is true and correct to the lepleteness and accuracy of data in this form because it he pleteness and accuracy of data in this form because it he mation is provided only as estimates of the average we detertace levels of dopants, metals, and non-metal mater ochip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices. Ochip disclaims any duty to notify users of updates or control of the provides of the service of the plates or control of the provided	omply with EU Directive Directive. Directive Directive). The control of the contr	og Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  ols, supplier declarations, and /or analytical test data.  I an intentional ingredient in the semiconductor device and dible reason to believe that the unavoidable impurity conce rich-wide.  plastics. You can access the UL iQTM family of databases to  vinyl chloride (PVC) plastic. "Window envelopes" used to h  g substances restricted by RoHS in Microchip Technology I d belief, as of the date listed in this form. Microchip Technology I d on the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract ass the average weight of anticipated significant toxic metals co licon devices (silicon IC) in the finished parts.	ds. Recast Direct.  d, to the best of the	of Microchip Technical substrated cannot grateful supplies estimates estimates lusive, limited re provided in ct, consequen	excemption)  echnology stance, if  outer box  or devices juarantee the iers. do not  product Microchip's tial or	0.16	(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	% of Total Weight 100 100.00 % of Total Weight 98 2	0.2
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV pliance with the above EU Directives has been verified with the above EU Directives has been verified with the micropart of the date of this does not below the threshold of regulatory concern for any ling compounds used by Microchip meet the UL94 V0 flat/ful.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 typleteness and accuracy of data in this form because it holier information is often protected from disclosure as treation is provided only as estimates of the average welde trace levels of dopants, metals, and non-metal mater ochip Technology Incorporated does not provide any wanties provided by Microchip Technology Incorporated ations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or crwise, suffered by users or third parties as a result of the	omply with EU Directive Directive. Directive Directive). The control of the contr	og Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  ols, supplier declarations, and /or analytical test data.  T an intentional ingredient in the semiconductor device and dible reason to believe that the unavoidable impurity conce Id-wide.  plastics. You can access the UL iQTM family of databases to vinyl chloride (PVC) plastic. "Window envelopes" used to he  g substances restricted by RoHS in Microchip Technology I d belief, as of the date listed in this form. Microchip Technology I d not the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract ass he average weight of anticipated significant toxic metals co icon devices (silicon IC) in the finished parts.  ied, with respect to the information provided in this declara contained in Microchip's standard terms and conditions of ent Declarations and shall not be liable for any damages, di	ds. Recast Direct.  d, to the best of the	of Microchip Technical substrated cannot grateful supplies estimates estimates lusive, limited re provided in ct, consequen	excemption)  echnology stance, if  outer box  or devices juarantee the iers. do not  product Microchip's tial or	0.16	Copper Palladium  (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 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00 % of Total Weight	7.5

SOIC150 08 CuPd 3:10 PM : 5/2/2014

3:10 PM : 5/2/2014

MICROCHIP  Semiconductor Device	Type: SO & OI 28 S	SOIC (300mil) (N3 / NN)		aation 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	614.78	(mg) Total	Mold Compound	% ot Total Weight	t 79.8
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	t 10.5
Silver	7440-22-4	Lead Frame	0.200	1.541	2,000	00.00	Copper	7440-50-8	95.54	1
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	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.027	35	3.70	Silver (Aq)	7440-22-4	80	7 0.75
Tin		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	9.630	12.500		Acrylate Urethane Oligome		20	
1111	7440-31-3	Plating on external leads (pins) - Matter III / annealed at 150°C for 1 nour TOTALS:	100.000	770.400	1.000.000		Acrylate Orethane Oligonie	Total		<u></u>
			100.000	770.400	1,000,000					
		Total Mass				57.78	Total (mg)	Chip (Die)	% of Total Weight	t 7.5
nis semiconductor device and its homogenous materials of rective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive 20	102/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol	HS Recast Dire	ctive) and witl	h EU		Doped Silicon	7440-21-3	100	
ompliance with the above EU Directives has been verified v	ria internal design controls	s, supplier declarations, and /or analytical test data.						Total	100.00	)
a chemical substance is absent from the list above, the cha acorporated's knowledge and belief as of the date of this do ny, is not below the threshold of regulatory concern for any	cument, there is no credit	ole reason to believe that the unavoidable impurity conc				1.54	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	t 0.2
olding compounds used by Microchip meet the UL94 V0 fla ttp://ul.com/global/eng/pages/offerings/industries/chemical		astics. You can access the UL iQTM family of databases	to obtain a tes	t report at			Copper	7440-50-8	98	
he protective "tubes" in which the specific product is shipp nd certain "reels" may be made from PVC plastic.	oed are made from polyvin	yl chloride (PVC) plastic. "Window envelopes" used to h	old the packin	g slip on the	outer box		Palladium	7440-05-3	2	
								Total	100.00	<u> </u>
icrochip Technology Incorporated believes the information their original packing materials is true and correct to the be ompleteness and accuracy of data in this form because it h upplier information is often protected from disclosure as tr formation is provided only as estimates of the average wei iclude trace levels of dopants, metals, and non-metal mater	est of its knowledge and be as been compiled based o ade secrets and some info ght of these parts and the	pelief, as of the date listed in this form. Microchip Techn n the ranges provided in Material Safety Data Sheets pro rimation may not have been provided by subcontract as: average weight of anticipated significant toxic metals or	ology Incorpor ovided by raw r semblers and r	ated cannot g naterial suppl aw material su	juarantee the liers. uppliers.			100	3000	
icrochip Technology Incorporated does not provide any wa arranties provided by Microchip Technology Incorporated uotations, sales order acknowledgement, and invoices.						9.63	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	t 1.25
icrochip disclaims any duty to notify users of updates or c therwise, suffered by users or third parties as a result of the this Certificate of Compliance for semiconductor products	users' reliance on the inf						Tin	7440-31-5	100.00	
this Certificate of Compliance for Semiconductor products					I					

SOIC300 28 CuPd

1ICROCHIP				nation Base / pper Alloy (C				geneous Materials: . pc boards, displays	;)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Devic	ce Type: SM 08 (Lead)	SOIJ (Small Outline-208 mil) (C3) "Contained In"	% Total						1	
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	1
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			Total	100.00	1
Iron	7439-89-6	Lead Frame	0.247	0.307	2,468	13.06	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.249	2,000	10.00	Copper	7440-50-8	95.54	1
Zinc	7440-66-6	Lead Frame	0.200	0.016	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.010	87		Silver	7440-22-4	1.91	
Silver (Aq)	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		Тиоорногодо	Total		1
Modified Amine	827-43-0	Die Attach	0.026	0.070	263	0.93	(mg) Total	Die Attach	% of Total Weight	
Silicon	7440-21-3	Chip (Die)	7.500	9.330	75.000	0.93		7440-22-4		0.75
							Silver (Ag)		75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197 0.004	0.244	1,965		Modified Epoxy Resin iglycidylether of bisphenol-F	13561-08-5	14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)		0.004	35	D		54208-63-8	8	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.555	12,500		Modified Amine	827-43-0		
		TOTALS:	100.000	124.400	1,000,000			Total		
					1,000,000			Total	100.00	
		Total Mass				9.33	Total (mg)	Chip (Die)	% of Total Weight	
	s comply with EU Directive 20					9.33	Total (mg)  Doped Silicon			
ective 2002/53/EC (End-of-Life Vehicles (ELV) Directive	s comply with EU Directive 20 ).	Total Mass 02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol				9.33		Chip (Die)	% of Total Weight	7.5
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	s comply with EU Directive 20 ). Indivia internal design controls chemical substance is NOT a document, there is no credib	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 an le reason to believe that the unavoidable impurity conc	HS Recast Dire	ective) and with	h EU	9.33		Chip (Die) 7440-21-3	% of Total Weight	7.5
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 a ling compounds used by Microchip meet the UL94 VO	s comply with EU Directive 20 ).  Id via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- O flammability standard for pla	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 an le reason to believe that the unavoidable impurity conc	HS Recast Dire	ective) and with of Microchip T e chemical sul	h EU		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond - Copper, palladium	% of Total Weight 100 100.00	7.5
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 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 VG: "//ul.com/global/eng/pages/offerings/industries/chemi- protective "tubes" in which the specific product is sh	s comply with EU Directive 20 ).  Id via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- 0 flammability standard for pla cals/plastics/	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 an le reason to believe that the unavoidable impurity concivide.	d, to the best of the obtain a test	of Microchip T e chemical sul	h EU echnology bstance, 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	7.5
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 rporated's knowledge and belief as of the date of this is not below the threshold of regulatory concern for a diling compounds used by Microchip meet the UL94 Volucom/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is should be a substantial to the specific product is should be a substantial to the specific product is should be a substantial to the specific product is should be a substantial to the specific product is should be a substantial to the specific product is should be a substantial to the sub	s comply with EU Directive 20 ).  Id via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- 0 flammability standard for pla cals/plastics/	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 an le reason to believe that the unavoidable impurity concivide.  Institute:  1. State of the semiconductor device and le reason to believe that the unavoidable impurity concivide.	d, to the best of the obtain a test	of Microchip T e chemical sul	h EU echnology bstance, if		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	0.2
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  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 Vo  "//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.  rochip Technology Incorporated believes the informat  teir original packing materials is true and correct to  the pleteness and accuracy of data in this form because in  pleteness and accuracy of data in this form because in  provided only as estimates of the average  we  remain in provided only as estimates of the average  we  consider the constance of the average we  constance of the server  constance of the constance  constance of the constance  constance of the constance  constanc	s comply with EU Directive 20 ). d via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- 10 flammability standard for pla cals/plastics/ iipped are made from polyvin; ion in this form concerning s te best of its knowledge and b it has been compiled based o is trade secrets and some info weight of these parts and the	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 an le reason to believe that the unavoidable impurity conc- wide.  stics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to be ubstances restricted by RoHS in Microchip Technology lelief, as of the date listed in this form. Microchip Techn in the ranges provided in Material Safety Data Sheets pro rmation may not have been provided by subcontract as average weight of anticipated significant toxic metals or	d, to the best of the obtain a test and the packing th	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot g material suppl aw material suppl	echnology bstance, if outer box tor devices puarantee the iers.		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	0.2
inctive 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 a ding compounds used by Microchip meet the UL94 Vo.://ul.com/global/eng/pages/offerings/industries/chemiprotective "tubes" in which the specific product is shorterian "reels" may be made from PVC plastic.  Trochip Technology Incorporated believes the informat neir original packing materials is true and correct to the pleteness and accuracy of data in this form because in plier information is often protected from disclosure as plier information is provided only as estimates of the average wude trace levels of dopants, metals, and non-metal materochip Technology Incorporated does not provide any	s comply with EU Directive 20 ). d via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- off fammability standard for pla cals/plastics/ sipped are made from polyving tion in this form concerning s the best of its knowledge and b it has been compiled based o strade secrets and some info weight of these parts and the tterials contained within silico	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 an le reason to believe that the unavoidable impurity conc- wide.  stics. You can access the UL iQTM family of databases yl chloride (PVC) plastic. "Window envelopes" used to be ubstances restricted by RoHS in Microchip Technology lelief, as of the date listed in this form. Microchip Techn in the ranges provided in Material Safety Data Sheets pro rmation may not have been provided by subcontract as average weight of anticipated significant toxic metals or	d, to the best of centration of the to obtain a test and the packin lincorporated's ology Incorporated by raw semblers and tomponents. The ation. The exclation.	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot c material suppl raw material suppl raw material suppl suese estimates	echnology bstance, if outer box tor devices juarantee the iers. uppliers. do not		Doped Silicon  (mg) Total  Copper  Palladium	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	0.2
ctive 2002/53/EC (End-of-Life Vehicles (ELV) Directive, pliance with the above EU Directives has been verified the microstate of the above the protested 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 Vol./ful.com/global/eng/pages/offerings/industries/chemic protective "tubes" in which the specific product is shocertain "reels" may be made from PVC plastic.  Ochip Technology Incorporated believes the informate iri original packing materials is true and correct to the pleteness and accuracy of data in this form because in olier information is often protected from disclosure as mation is provided only as estimates of the average we detrace levels of dopants, metals, and non-metal materials of the provided only as estimates of the provide any anties provided by Microchip Technology Incorporate ations, sales order acknowledgement, and invoices.	s comply with EU Directive 20 ).  d via internal design controls chemical substance is NOT a document, there is no credib any regulatory scheme world- of fammability standard for pla cals/plastics/ sipped are made from polyving ion in this form concerning s the best of its knowledge and b it has been compiled based or strade secrets and some info weight of these parts and the tetrials contained within silico warranty, express or implied and its subsidiaries are co or changes to Material Content the users' reliance on the inf	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 an le reason to believe that the unavoidable impurity conc- wide.  Istics. 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 lelief, as of the date listed in this form. Microchip Techn in the ranges provided in Material Safety Data Sheets pr mation may not have been provided by subcontract as average weight of anticipated significant toxic metals of an devices (silicon IC) in the finished parts.  , with respect to the information provided in this declar.	d, to the best of the to obtain a test of the packir lincorporated's ology incorpo ovided by raw semblers and imponents. The action. The excit f sale. These a	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot g material suppl raw material su lese estimates	echnology bstance, if outer box tor devices juarantee the liers. uppliers. ido not product Microchip's	0.25	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 150°C for	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.2

SOIC208 08 CiPd 3:10 PM : 5/2/2014

MICROCHIP  Semiconductor Device 1		05 (Lead) SOT-23 (C7)		nation Base A	. ,			geneous Materials: . pc boards, displays	)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	7,	"Contained In"	% Total							
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		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 13561-08-5	Die Attach Die Attach	0.563	0.090	5,625 1.050		Zinc Phosphorous	7440-66-6 7723-14-0	0.13 0.08	
Modified Epoxy Resin							Phosphorous	7723-14-0 Total		
Diglycidylether of bisphenol-F Modified Amine	54208-63-8 827-43-0	Die Attach Die Attach	0.056	0.009	563 263	0.12	() T-1-1	Die Attach	% of Total Weight	0.75
						0.12	(mg) Total			0.75
Silicon Copper	7440-21-3 7440-50-8	Chip (Die) Wire Bond palladium coated copper (CuPd)	7.500 0.197	1.200 0.031	75,000 1.965		Silver (Ag) Modified Epoxy Resin	7440-22-4 13561-08-5	75 14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)  Wire Bond palladium coated copper (CuPd)	0.004	0.001	35	Dia	lycidylether 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	0.200	12,500	Dig	Modified Amine	827-43-0	4	
1111	7440 01 0	TOTALS:	100.000	16.000	1,000,000		modinod 7 minio	Total	100.00	
	0.0160	g Total Mass		.0.000	1,000,000	1.20	Total (mg)	Chip (Die)	% of Total Weight	7.5
his semiconductor device and its homogenous materials co irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). compliance with the above EU Directives has been verified vi		, , ,	HS Recast Dire	ctive) and witl	h EU		Doped Silicon	7440-21-3 Total	100	
f a chemical substance is absent from the list above, the cher ncorporated's knowledge and belief as of the date of this dot any, is not below the threshold of regulatory concern for any	cument, there is no cred	lible reason to believe that the unavoidable impurity conce				0.03	(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
Molding compounds used by Microchip meet the UL94 V0 flan http://ul.com/global/eng/pages/offerings/industries/chemicals		plastics. You can access the UL iQTM family of databases	to obtain a tes	t report at			Copper	7440-50-8	98	
he protective "tubes" in which the specific product is shipp	ed are made from polyvi	inyl chloride (PVC) plastic. "Window envelopes" used to h	old the nackin	a slin on the	outer box					
			ioid the packing	g 0p 0o			Palladium	7440-05-3	2	
and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information n their original packing materials is true and correct to the be	est of its knowledge and	substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techn	Incorporated's	semiconduct	juarantee the		Palladium	7440-05-3 Total	-	
and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information	est of its knowledge and as been compiled based ade secrets and some in ght of these parts and th	substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract asse a werage weight of anticipated significant toxic metals co	Incorporated's ology Incorporovided by raw r semblers and r	s semiconduct rated cannot g naterial suppl aw material su	juarantee the iers. uppliers.		Palladium		-	
and certain "reels" may be made from PVC plastic.  Microchip Technology Incorporated believes the information in their original packing materials is true and correct to the be completeness and accuracy of data in this form because it ha supplier information is often protected from disclosure as tranformation is provided only as estimates of the average weig	est of its knowledge and as been compiled based ade secrets and some inf ght of these parts and th als contained within sili- urranty, express or implie	substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets proformation may not have been provided by subcontract asse average weight of anticipated significant toxic metals cocon devices (silicon IC) in the finished parts.  ed, with respect to the information provided in this declarate.	Incorporated's ology Incorpor ovided by raw resemblers and romponents. The action. The excl	s semiconduct rated cannot g material suppl aw material su ese estimates	guarantee the iers. uppliers. do not	0.20	(mg) Total		-	1.25
nd certain "reels" may be made from PVC plastic.  licrochip Technology Incorporated believes the information their original packing materials is true and correct to the be mpleteness and accuracy of data in this form because it ha upplier information is often protected from disclosure as tra formation is provided only as estimates of the average weig clude trace levels of dopants, metals, and non-metal materi.  licrochip Technology Incorporated does not provide any wa rarranties provided by Microchip Technology Incorporated a	est of its knowledge and as been compiled based ade secrets and some inf inject of these parts and the als contained within sili- urranty, express or implie and its subsidiaries are contained to the part of the ananges to Material Conte a users' reliance on the li	substances restricted by RoHS in Microchip Technology id belief, as of the date listed in this form. Microchip Technology on the ranges provided in Material Safety Data Sheets proformation may not have been provided by subcontract asse average weight of anticipated significant toxic metals coron devices (silicon IC) in the finished parts.  ed, with respect to the information provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in Microchip's standard terms and conditions of the provided in this declaracontained in the this declaracontained in this declaracontained in this declaraconta	Incorporated's ology incorpor ovided by raw in semblers and romponents. The tation. The excliption is also incorporate and inc	s semiconduct rated cannot g naterial suppl aw material si ese estimates usive, limited re provided in	juarantee the iers. uppliers. do not product Microchip's	0.20	(mg) Total	Total  Plating on external leads (pins) - Matte Tin / annealed at 150°C for	100.00	1.25

SOT23 05 CuPd 3:10 PM : 5/2/2014

MICROCHIP  Semiconductor Device Typ	De: CH and OT (	16 (Lead) SOT-23 (C8)		aation Base A oper Alloy (C				ogeneous Materials: g. pc boards, displays	)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			13.57	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	13.57	(mg) rotai	wola Compouna	% of 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			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	
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 / Handana	Polymeric Retanning Agent	Die Attach	0.019	0.003	188			Total	100.00	
Curing / Hardener			7.500					1		
Silicon	7440-21-3	Chip (Die)		1.275	75,000	0.13	(mg) Total	Die Attach	% of Total Weight	0.75
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.033	1,965		Epoxy resin	Trade Secret	75	
Palladium Tin	7440-05-3 7440-31-5	Wire Bond palladium coated copper (CuPd)  Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.001	35 12,500		Silicon dioxide Curing / Hardener	7631-86-9 Trade Secret	23	
III	7440-31-5						Curing / Hardener	Total	3 100.00	
		TOTALS:	100.000	17.000	1,000,000	1.28	Total (mg)	Chip (Die)	% of Total Weight	7.5
pliance with the above EU Directives has been verified via in	ternal design control	s, supplier declarations, and /or analytical test data.						Total	100.00	l
chemical substance is absent from the list above, the chemical proprated's knowledge and belief as of the date of this docum , is not below the threshold of regulatory concern for any regu	ent, there is no credi	ble reason to believe that the unavoidable impurity conce				0.03	(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
ding compounds used by Microchip meet the UL94 V0 flammatilul.com/global/eng/pages/offerings/industries/chemicals/pla		lastics. You can access the UL iQTM family of databases	to obtain a tes	t report at			Copper	7440-50-8	98	
protective "tubes" in which the specific product is shipped a certain "reels" may be made from PVC plastic.	ıre made from polyvir	nyl chloride (PVC) plastic. "Window envelopes" used to h	old the packir	g slip on the	outer box		Palladium	7440-05-3	2	
ochin Technology Incorporated believes the information in the	his form concerning	substances restricted by RoHS in Microchin Technology	Incorporated's	semiconduct	tor devices			Total	100.00	
crochip Technology Incorporated believes the information in their original packing materials is true and correct to the best on pleteness and accuracy of data in this form because it has be obtained information is often protected from disclosure as trade is ormation is provided only as estimates of the average weight of tude trace levels of dopants, metals, and non-metal materials or	of its knowledge and een compiled based of secrets and some info of these parts and the contained within silic hty, express or implied	belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets pro ormation may not have been provided by subcontract assess average weight of anticipated significant toxic metals coon devices (silicon IC) in the finished parts.  d, with respect to the information provided in this declara	ology Incorporated by raw is semblers and romponents. The action. The excl	ated cannot g naterial suppl aw material su ese estimates usive, limited	guarantee the liers. uppliers. do not product	0.21	(mg) Total	Plating on external leads (pins) - Matte Tin		1 25
neir original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has be pleteness and accuracy of data in this form because it has be plier information is often protected from disclosure as trade a rmation is provided only as estimates of the average weight of detailed the control of the average weight of the control of the control of the average weight of the control of the control of the average weight of the control of the control of the average weight of the control	of its knowledge and een compiled based of secrets and some info fof these parts and the contained within silic hty, express or implied its subsidiaries are co ges to Material Conter	belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets pro ormation may not have been provided by subcontract assess average weight of anticipated significant toxic metals co con devices (silicon 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 Declarations and shall not be liable for any damages, d	ology Incorpo ovided by raw i semblers and r imponents. Th ation. The excl i sale. These a	ated cannot g naterial suppl aw material su ese estimates usive, limited e provided in	guarantee the liers. uppliers. do not product Microchip's	0.21	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 11 hour	% of Total Weight	1.25
neir original packing materials is true and correct to the best of pleteness and accuracy of data in this form because it has plier information is often protected from disclosure as trade or tradition is provided only as estimates of the average weight of ude trace levels of dopants, metals, and non-metal materials of the provided only as estimates.	of its knowledge and een compiled based of secrets and some info fof these parts and the contained within silic hty, express or implied its subsidiaries are co ges to Material Conter	belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets pro ormation may not have been provided by subcontract assess average weight of anticipated significant toxic metals co con devices (silicon 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 Declarations and shall not be liable for any damages, d	ology Incorpo ovided by raw i semblers and r imponents. Th ation. The excl i sale. These a	ated cannot g naterial suppl aw material su ese estimates usive, limited e provided in	guarantee the liers. uppliers. do not product Microchip's	0.21	(mg) Total Tin	Plating on external leads (pins) - Matte Tin / annealed at 150°C for		1.25

SOT23 06 CuPd 3:10 PM : 5/2/2014

ICROCHIP  Semiconductor Device	Type: PT 44 (Lead)	TQFP 10x10x1mm (T4/TY)		nation Base / pper Alloy (C	. ,		Package Homo	geneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
	71	"Contained In"	% Total			040.00	() T-1-I	M-14.04	0/ -4 T-4-13W-1-b4	70.0
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	218.09	(mg) Total	Mold Compound	% ot Total Weight	79.8
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	100.00	1
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	0.047	0.029	105		Silver	7440-02-0	1.67	
	7439-95-4	Die Attach	0.600	1.640	6,000		Silicon	7440-22-4	0.45	
Silver (Ag)										
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	General	20	
				070 000	1.000.000			Total	100.00	1
		TOTALS:	100.000	273.300				iotai		
		g Total Mass			,,,,,,,	20.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directive	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH			,,,,,,,	20.50	Total (mg)  Doped Silicon		% of Total Weight	
a 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  Ince with the above EU Directives has been verified vehicles with the same of the characteristic substance is absent from the list above, the character's knowledge and belief as of the date of this doot below the threshold of regulatory concern for any	omply with EU Directive in internal design control of the internal design control of the internal design control of the internal design in internal design internal design in internal design internal desi	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conceld-wide.	S Recast Dire	ective) and with of Microchip T e chemical sul	h EU	20.50		Chip (Die) 7440-21-3	% of Total Weight	-
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ance with the above EU Directives has been verified vemical substance is absent from the list above, the che rated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any g compounds used by Microchip meet the UL94 V0 flate.	omply with EU Directive : ria internal design contro emical substance is NOT cument, there is no cred r regulatory scheme worl ammability standard for p	g Total Mass 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  Pls, supplier declarations, and /or analytical test data.  In intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conce	S Recast Dire	ective) and with of Microchip T e chemical sul	h EU		Doped Silicon	Chip (Die) 7440-21-3 Total Wire Bond palladium coated	% of Total Weight 100 100.00	
ve 2002/53/EC (End-of-Life Vehicles (ELV) Directive). iance with the above EU Directives has been verified vertical substance is absent from the list above, the chorated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for any ag compounds used by Microchip meet the UL94 Vo fla. Il.com/global/eng/pages/offerings/industries/chemical otective "tubes" in which the specific product is shipp	omply with EU Directive : ria internal design control emical substance is NOT occument, there is no cred or regulatory scheme worl ammability standard for p s/plastics/	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conceld-wide.	S Recast Dire	ective) and with of Microchip T e chemical sul	h EU echnology bstance, if		Doped Silicon  (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond palladium coated copper (CuPd)	% of Total Weight 100 100.00 % of Total Weight	
ive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). liance with the above EU Directives has been verified vemical substance is absent from the list above, the chorated's knowledge and belief as of the date of this do not below the threshold of regulatory concern for anying compounds used by Microchip meet the UL94 V0 file. Locm/global/eng/pages/offerings/industries/chemical otective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.	omply with EU Directive :  ria internal design control  emical substance is NOT  ocument, there is no cred  regulatory scheme worl  ammability standard for p  s/plastics/  bed are made from polyvi  in this form concerning  sest of its knowledge and  as been compiled based  adde secrets and some in  ght of these parts and th	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conce  id-wide.  olastics. You can access the UL iQTM family of databases to  inyl chloride (PVC) plastic. "Window envelopes" used to he  substances restricted by RoHS in Microchip Technology I  belief, as of the date listed in this form. Microchip Techno  on the ranges provided by RoHS in Microchip Subcontract ass  e average weight of anticipated significant toxic metals co	S Recast Dire  I, to the best of intration of the coordinates a coordinate of the coordinates of the coordin	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot g material suppl 'aw material suppl	echnology bstance, if outer box tor devices puarantee the liers.		Doped Silicon  (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	
tive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).  bliance with the above EU Directives has been verified value in the list above, the cheorated's knowledge and belief as of the date of this do is not below the threshold of regulatory concern for any geompounds used by Microchip meet the UL94 V0 flavul.com/global/eng/pages/offerings/industries/chemical rotective "tubes" in which the specific product is shippertain "reels" may be made from PVC plastic.  chip Technology Incorporated believes the information ir original packing materials is true and correct to the beleteness and accuracy of data in this form because it hier information is often protected from disclosure as that in the information is often protected from disclosure structure in the internation is provided only as estimates of the average weight the process of the structure of the control of the control of the provided only as estimates of the average weight the process of the control of the provided only as estimates of the average weight in the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimates of the average weight the provided only as estimated the provided and the provided only as estimated the provided and t	omply with EU Directive in internal design control internal design internal de	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conce  id-wide.  olastics. You can access the UL iQTM family of databases to  inyl chloride (PVC) plastic. "Window envelopes" used to he  substances restricted by RoHS in Microchip Technology I  belief, as of the date listed in this form. Microchip Techno  on the ranges provided by RoHS in Microchip Subcontract ass  e average weight of anticipated significant toxic metals co	S Recast Dire  I, to the best of ntration of the oobtain a test old the packir encorporated's logy Incorpor wided by raw imponents. The tion. The excl	of Microchip T e chemical sul st report at ing slip on the s semiconduct rated cannot of material suppl raw material suppl raw	echnology bstance, if outer box tor devices juarantee the iers. uppliers. do not		Doped Silicon  (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	
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 not below the threshold of regulatory concern for any ag compounds used by Microchip meet the UL94 V0 fla il.com/global/eng/pages/offerings/industries/chemical otective "tubes" in which the specific product is shipp rtain "reels" may be made from PVC plastic.  Thip Technology Incorporated believes the information original packing materials is true and correct to the b eteness and accuracy of data in this form because it h er information is often protected from disclosure as traiton is provided only as estimates of the average wei e trace levels of dopants, metals, and non-metal mater  hip Technology Incorporated does not provide any wa ties provided by Microchip Technology Incorporated i sons, sales order acknowledgement, and invoices.  hip disclaims any duty to notify users of updates or cl	omply with EU Directive : ria internal design control emical substance is NOT occument, there is no cred regulatory scheme worl ammability standard for p s/plastics/ oed are made from polyvi in this form concerning eest of its knowledge and as been compiled based ade secrets and some in ght of these parts and th ials contained within sili arranty, express or implicand its subsidiaries are c hanges to Material Conte e users' reliance on the i	g Total Mass  2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH  ols, supplier declarations, and /or analytical test data.  an intentional ingredient in the semiconductor device and lible reason to believe that the unavoidable impurity conce id-wide.  olastics. You can access the UL iQTM family of databases to inyl chloride (PVC) plastic. "Window envelopes" used to he  substances restricted by RoHS in Microchip Technology I belief, as of the date listed in this form. Microchip Techno on the ranges provided in Material Safety Data Sheets pro formation may not have been provided by subcontract ass e average weight of anticipated significant toxic metals co con devices (silicon IC) in the finished parts.	S Recast Dire	of Microchip T e chemical sul st report at ng slip on the s semiconduct rated cannot c material suppl aw material supe see estimates usive, limited re provided in ct, consequen	h EU echnology bstance, if  outer box tor devices juarantee the iers. do not  product Microchip's	0.55	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 /annealed at 150°C for	% of Total Weight 100 100.00 % of Total Weight 98 2 100.00	0.2

TQFP10x10 44 CuPd 3:10 PM : 5/2/2014

Semiconductor Device Type:	PT	64 (Lead) TQFP 10x10x1mm (V2/VG)		nation Base A pper Alloy (C	.,		Package Hom	ogeneous Materials		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total	_		228.79	(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	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	
Phenolic Resin	Trade Secret	Mold Compound	4.078	11.691	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.709	2,474		Carbon Black	1333-86-4	0.31	
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		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.135	473		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.047	0.135	105		Silver	7440-02-0	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.600	1.720	6.000		Silicon	7440-22-4	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.600	0.430	1,500		Magnesium	7440-21-3	0.45	
, ,							iviagnesium	7439-95-4 Total		
Silicon	7440-21-3	Chip (Die)	7.500	21.503	75,000				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	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.584	12,500		Acrylate Urethane Oligon		20	
		TOTALS:	100.000	286.700	1,000,000			Total	100.00	•
	0 2867 (	Total Mass				21.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
s semiconductor device and its homogenous materials comply vective 2002/53/EC (End-of-Life Vehicles (ELV) Directive).			IS Recast Dire	ctive) and witl	n EU		Doped Silicon	7440-21-3	100	
npliance with the above EU Directives has been verified via inter	nal design control									
		s, supplier declarations, and /or analytical test data.						Total	100.00	
chemical substance is absent from the list above, the chemical proprated's knowledge and belief as of the date of this documen	substance is NOT a	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce				0.57	(mg) Total	Total Wire Bond palladium coated copper (CuPd)	100.00 % of Total Weight	0.2
. chemical substance is absent from the list above, the chemical sopporated's knowledge and belief as of the date of this documen , is not below the threshold of regulatory concern for any regulading compounds used by Microchip meet the UL94 V0 flammabi	substance is NOT a t, there is no credii ttory scheme world ility standard for pl	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce -wide.	entration of the	chemical sub		0.57	(mg) Total	Wire Bond palladium coated		0.2
chemical substance is absent from the list above, the chemical corporated's knowledge and belief as of the date of this documen, is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammabios://ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are	substance is NOT a t, there is no credil ttory scheme world ility standard for pl ics/	in intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce- wide. astics. You can access the UL iQTM family of databases	entration of the	chemical sub	ostance, if	0.57	, ,	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2
chemical substance is absent from the list above, the chemical corporated's knowledge and belief as of the date of this document, is not below the threshold of regulatory concern for any regular iding compounds used by Microchip meet the UL94 V0 flammabing://ul.com/global/eng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are did certain "reels" may be made from PVC plastic.	substance is NOT a t, there is no credii ttory scheme world ility standard for pl ics/ made from polyvir	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce- wide. astics. You can access the UL iQTM family of databases by chloride (PVC) plastic. "Window envelopes" used to h	entration of the	e chemical sub t report at g slip on the o	ostance, if	0.57	Copper	Wire Bond palladium coated copper (CuPd) 7440-50-8	% of Total Weight	0.2
chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this documen , is not below the threshold of regulatory concern for any regula Iding compounds used by Microchip meet the UL94 V0 flammabip://ul.com/global/eng/pages/offerings/industries/chemicals/plastie protective "tubes" in which the specific product is shipped are deratin "reels" may be made from PVC plastic.  crochip Technology Incorporated believes the information in this heir original packing materials is true and correct to the best of impleteness and accuracy of data in this form because it has been polier information is often protected from disclosure as trade secondation is provided only as estimates of the average weight of	substance is NOT at, there is no creditory scheme world ility standard for plics/ made from polyvir form concerning at the knowledge and a compiled based a crets and some infehese parts and the	an intentional ingredient in the semiconductor device and ble reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases by chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets progration may not have been provided by subcontract ass average weight of anticipated significant toxic metals co	entration of the to obtain a test old the packin incorporated's blogy Incorpor vided by raw remblers and r	e chemical sub t report at g slip on the of semiconduct ated cannot g naterial suppl aw material su	outer box or devices uarantee the iers. uppliers.	0.57	Copper	Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	% of Total Weight  98	0.2
chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this documen, is not below the threshold of regulatory concern for any regular liding compounds used by Microchip meet the UL94 V0 flammabio: //ul.com/globa/leng/pages/offerings/industries/chemicals/plastic protective "tubes" in which the specific product is shipped are didertain "reels" may be made from PVC plastic.  Prochip Technology Incorporated believes the information in this heir original packing materials is true and correct to the best of impleteness and accuracy of data in this form because it has been pipiler information is often protected from disclosure as trade secondation is provided only as estimates of the average weight of t lude trace levels of dopants, metals, and non-metal materials controlled to the provide only incorporated does not provide any warranty, trranties provided by Microchip Technology Incorporated and its	substance is NOT: t, there is no creditory scheme world litty standard for pl cs/ made from polyvir form concerning sts knowledge and n compiled based crets and some infehese parts and the ntained within silic express or implier	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases by chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology is belief, as of the date listed in this form. Microchip Technon the ranges provided in Material Safety Data Sheets provination may not have been provided by subcontract ass average weight of anticipated significant toxic metals co on devices (silicon IC) in the finished parts.	ntration of the to obtain a tes old the packin incorporated's ology Incorpor vided by raw i emblers and r mponents. Th	t report at g slip on the c semiconduct ated cannot g naterial suppl aw material se see estimates usive, limited	outer box or devices uarantee the iers. do not	0.57 3.58	Copper	Wire Bond palladium coated copper (CuPd) 7440-50-8 7440-05-3	% of Total Weight  98	1.25
chemical substance is absent from the list above, the chemical orporated's knowledge and belief as of the date of this documen , is not below the threshold of regulatory concern for any regulating compounds used by Microchip meet the UL94 V0 flammabip://ul.com/global/eng/pages/offerings/industries/chemicals/plastip protective "tubes" in which the specific product is shipped are	substance is NOT: t, there is no creditory scheme world litty standard for pl cs/ made from polyvir form concerning sts knowledge and n compiled based crets and some infehese parts and the ntained within silic express or implies subsidiaries are co	an intentional ingredient in the semiconductor device and ole reason to believe that the unavoidable impurity conce-wide.  astics. You can access the UL iQTM family of databases by chloride (PVC) plastic. "Window envelopes" used to he substances restricted by RoHS in Microchip Technology is belief, as of the date listed in this form. Microchip Technol in the ranges provided in Material Safety Data Sheets profundton may not have been provided by subcontract ass 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 declarantained in Microchip's standard terms and conditions of at Declarations and shall not be liable for any damages, dat Declarations and shall not be liable for any damages, dat	entration of the to obtain a tes old the packin incorporated's ology Incorpor vided by raw remblers and remponents. The tion. The excl sale. These are irect or indirect or indirect	t report at g slip on the of the semiconduct atted cannot gnaterial supplay material suese estimates usive, limited re provided in the consequent	outer box or devices uarantee the iers. uppliers. do not product Microchip's		Copper	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	% of Total Weight  98  2  100.00	
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TQFP10x10 64 CuPd 3:10 PM : 5/2/2014