

Introduction and Methodology

Microchip Technology Incorporated's (Microchip) semiconductor devices are assembled at our assembly facility outside Bangkok, Thailand, and by sub-contracted 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.

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.

Prior to July 2009, Microchip semiconductor devices may contain Antimony Trioxide, $[Sb_2O_3]$ (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.

Many of the mold compounds used by Microchip or its sub-contract assembly houses contained one of two brominates phenolic/epoxy polymers: CAS # 68541-56-0 or CAS # 40039-93-8. Neither of these brominated phenolic/epoxy polymers are regulated by European Union Directive 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 semiconductor products may contain Nickel (Ni). 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 also an impurity in the Matte Tin plating process, an alloy ingredient for the Copper (C194 / C7025) and A42 lead frames used by Microchip. Each occurrence is compliant with EU Directive 94/27/EC. Please consult the specific Material Content Declaration (MCD) for the estimated material content value.



Red Phosphorous

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. Diantimony trioxide is the primary inorganic flame retardant material in most mold compounds; one unique mold compound uses 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 consumer recyclate?	0 g / 0%

Joint Industry Guide No. JIG-101 Ed. 4.0

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.

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.

MICROCHIP Semiconductor Device T	/pe: EB 03 (Lead)	DDPAK (F4)	Termin Co	nation Base A pper Alloy (C	ulloy: u)		Package Hom 8.1 Electronics (é	ogeneous Materials: a.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	maa	544.12	(mg) Total	Mold Compound	% ot Total Weight	39.21
		·			P P ····	CEL-	Evend Office	00070 00 0	00.00	
Fused Silica	60676-86-0	Mold Compound	34.505	478.823	345,048	9240HF10	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	J
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
						HCL-12S +				
Silver	7440-22-4	Lead Frame	1.138	15.790	11,379	Ag	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	84-1LMISR4	Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.610	8.465	6,100		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	1,387.700	1,000,000	Prop	rietary Curing agent & Hare	Trade Secret	3	
	1.3877	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 v	ia internal design cont	rols, supplier declarations, and /or analytical test data.				3.75	Total (mg) Silicon	Chip (Die) 7440-21-3	% of Total Weight 100	0.27
If a chemical substance is absent from the list above, the chr Technology Incorporated's knowledge and belief as of the da chemical substance, if any, is not below the threshold of reg	emical substance is NC te of this document, th ulatory concern for any	VT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable or regulatory scheme world-wide.	and, to the b e impurity coi	est of Microch centration of	ip the			Totai	100.00	
Molding compounds used by Microchip meet the UL94 V0 fla http://ul.com/global/eng/pages/offerings/industries/chemical	mmability standard for s/plastics/	r plastics. You can access the UL iQTM family of databas	ses to obtain a	i test report at	t	0.97	(mg) Total	Wire Bond	% of Total Weight	0.07
The protective "tubes" in which the specific product is shipp box and certain "reels" may be made from PVC plastic.	ed are made from poly	rvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Gold	7440-57-5	100	
								Total	100.00	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correc guarantee the completeness and accuracy of data in this for material suppliers. Supplier information is often protected fr raw material suppliers. Information is provided only as estim These estimates do not include trace levels of dopants, meter	in this form concernir to the best of its know n because it has been om disclosure as trade tates of the average we ls, and non-metal mate	g substances restricted by RoHS in Microchip Technolc /ledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe secrets and some information may not have been prov ight of these parts and the average weight of anticipated rials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ty Data Sheets ided by subco I significant to finished parts	ed's semicon ogy Incorpora provided by ntract assemi oxic metals co	ductor ited cannot raw blers and mponents.					
Microchip Technology Incorporated does not provide any we product warranties provided by Microchip Technology Incor in Microchip's quotations, sales order acknowledgement, an	rranty, express or imp porated and its subsidi d invoices.	lied, with respect to the information provided in this dec aries are contained in Microchip's standard terms and c	laration. The onditions of s	exclusive, lim ale. These are	ited e provided	8.46	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.61
Microchip disclaims any duty to notify users of updates or cl otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	nanges to Material Con e users' reliance on the products.	tent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or i	s, direct or in ndependent t	lirect, conseq hird party test	uential or reports			7440-31-5	100.00	
						1	-	Total	100.00	•
						1.387.700				100 000

		2224/	Termiı Co	nation Base A pper Alloy (C	Alloy: :u)		Package Hom 8.1 Electronics (e	ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device 1	ype: EI 05 (Lead)	DDPAK (J7)					-			
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	463 603	233 728	CEL- 9240HE10	Fused Silica	60676-86-0	88.00	
Epoyy Resin 1	Trade Secret	Mold Compound	0.863	17 125	8.632	524011110	Enoxy Resin 1	Trade Secret	3 25	
Epoxy Resin 2	Trade Secret	Mold Compound	0.000	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		ondobialod	Total	100.00	4
Tin	7440-30-6	Load Frame	0.110	2 261	1 100	4 4 2 0 7 0	(Lord From a	0(- 4 T- 4-1)Mainh4	70.40
	7440-31-5	Leau Frame	0.119	2.301	1,190	1430.79	(mg) I otal	Lead Frame	% of I otal Weight	/2.12
Others	7440.00.4	Land France	4.074	07.057	40 700	HCL-12S +	â	7449 59 9	07.00	
Silver	7440-22-4	Lead Frame	1.374	21.257	13,739	Ag	Copper	7440-50-8	97.93	4 1
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	4	Silver	7440-22-4	1.91	<u> </u>
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
						84-				
Gold	7440-57-5	Wire Bond	0.040	0.794	400	1LMISR4	Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.570	11.308	5,700		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	1.983.900	1.000.000	Proprietary	Curing agent & Hardener	Trade Secret	3	1 1
	1 0920	a Total Mass		,	,,			Total	100.00	9
This semiconductor device and its homogenous materials or Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directiv	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	12.30	Total (mg)	Chip (Die)	% of Total Weight	0.62
compliance with the above EO Directives has been vermed	via internai design con	tions, supplier decidiations, and for analytical test data.					Doped Silicon	7440-21-3	100]
If a chemical substance is absent from the list above, the ch Technology Incorporated's knowledge and belief as of the d chemical substance, if any, is not below the threshold of reg	nemical substance is No late of this document, t gulatory concern for an	OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the b le impurity cor	est of Microch acentration of	hip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 fl http://ul.com/global/eng/pages/offerings/industries/chemica	ammability standard fo Ils/plastics/	r plastics. You can access the UL iQTM family of databa	ises to obtain a	a test report a	t	0.79	(mg) Total	Wire Bond	% of Total Weight	0.04
The protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic.	ped are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	l to hold the pa	cking slip on	the outer		JGPSSI (D02)	7440-57-5	100	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correc guarantee the completeness and accuracy of data in this for material suppliers. Supplier information is often protected f raw material suppliers. Information is provided only as estin These estimates do not include trace levels of dopants, met	n in this form concerni ct to the best of its know rm because it has been rom disclosure as tradi nates of the average we als, and non-metal mat	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been pro eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ety Data Sheets vided by subcc ed significant to e finished parts	ed's semicon ogy Incorpora provided by ontract assem oxic metals co s.	nductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any w product warranties provided by Microchip Technology Incor in Microchip's quotations, sales order acknowledgement, ar	arranty, express or imp rporated and its subsid nd invoices.	blied, with respect to the information provided in this de iaries are contained in Microchip's standard terms and	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	11.31	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	0.57
Microchip disclaims any duty to notify users of updates or o otherwise, suffered by users or third parties as a result of th (SGS) or of this Certificate of Compliance for semiconducto	changes to Material Cor ne users' reliance on the r products.	ttent Declarations and shall not be liable for any damag e information in Material Content Declarations (MCD) or	es, direct or ind independent ti	direct, consec hird party test	quential or reports		Tin	7440-31-5	100.00	
								Total	100.00	Т — — — — — — — — — — — — — — — — — — —
						1,983,900		TOLA	100.00	100.000

	MC 08 (Lead) DFN 2x3 mm (B3 / BY)	Termin Coj	ation Base A oper Alloy (Cu	lloy: u)		Package Homo 8.1 Electronics (e.	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	7.49	(mg) Total	Mold Compound	% ot Total Weight	48
Silico, fured	60676 96 0	Mold Compound	42 200	6 720	422.000	EME-	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.328	0.759	23 280	Epox	v Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.328	0.363	23,280	Ebo,	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	(ma) Total	Lead Frame	% of Total Weight	45.6
	1110 01 0	Eddd Franio	0.111	0.010	1,110	FFTEC64T +	(ing) rotai	Lead I fame	/// Total Weight	40.0
Silver	7440-22-4	Lead Frame	0.869	0.136	8.687	Aa	Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.082	0.013	821	~g	Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.114	0.018	1,140	1	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	
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	8200T	(ing) rotal Silver	7440-22-4	78	0.2.1
Gold	7440-57-5	Wire Bond	0.400	0.062	4 000	02001	Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / appealed at 150°C for 1 hour	4 120	0.643	41 200		Treated silica	Trade Secret	2	
100	1440 01 0	TOTALS:	100 000	15 600	1 000 000	Hoto	rocyclic organic compound	Trade Secret	2	
	0.0450	n Tatal Maaa	100.000	10.000	1,000,000	Tiele	tocyclic organic compound	Tatal	2 100.00	
	0.0156	g Total Mass						I ULAI	100.00	
This semiconductor device and its homogenous materials comply v Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	vith EU Directiv	/e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	0.26	Total (mg)	Chip (Die)	% of Total Weight	1.64
Compliance with the above EU Directives has been verified via intern	nal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a shamiast substance is shown from the list shous, the shamiast s	ubatanaa la Ni	OT an intentional ingradient in the comisenductor douis	a and to the he	at of Miaraah	in .		ļ I	Total	100.00	
Technology Incorporated's knowledge and belief as of the date of th chemical substance, if any, is not below the threshold of regulatory	is document, t concern for an	here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	le impurity con	centration of	the					
Molding compounds used by Microchip meet the UL94 V0 flammabil http://ul.com/global/eng/pages/offerings/industries/chemicals/plasti	lity standard fo cs/	r plastics. You can access the UL iQTM family of databa	ases to obtain a	test report at	t	0.06	(mg) Total	Wire Bond	% of Total Weight	0.4
The protective "tubes" in which the specific product is shipped are a box and certain "reels" may be made from PVC plastic.	made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	I to hold the pa	cking slip on t	the outer		Gold	7440-57-5	100	
Missishin Technology Incomposited believes the inferred by the								Total	100.00	
Microcinip reciniciogy incorporated believes the information in this devices in their original packing materials is it rue and correct to the guarantee the completeness and accuracy of data in this form becau 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	torm concerni best of its know use it has been closure as trade the average we non-metal mat	In Substances restricted by Korls in Microchip Techno Wedge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been pro- eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy incorporat ochip Technolo ety Data Sheets vided by subco ed significant to e finished parts	ed s semicon ogy Incorpora provided by ntract assemi xic metals co	ductor ited cannot raw blers and imponents.					
Microchin Technology Incorporated does not provide any warranty	express or im-	lied with respect to the information provided in this de	claration The	avelueive lim	ited			Plating on external		
product warranties provided by Microchip Technology Incorporated in Microchip Technology Incorporated in Microchip's quotations, sales order acknowledgement, and invoic	and its subsid	iaries are contained in Microchip's standard terms and	conditions of s	ale. These are	e provided	0.64	(mg) Total	leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.12
Microchip disclaims any duty to notify users of updates or changes otherwise, suffered by users or third parties as a result of the users' (SGS) or of this Certificate of Compliance for semiconductor product	to Material Cor reliance on the ts.	ttent Declarations and shall not be liable for any damag e information in Material Content Declarations (MCD) or	es, direct or inc independent th	lirect, conseq ird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	
						15,600		Tota		100.000

MICROCHIP Semiconductor Device		3v3 mm (A7 / A I)	Termir Co	ation Base A oper Alloy (C	Alloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: a.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	Type: In OU (Lead) DI N	"Contained In"	% Total	1	1					
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	12.20	(mg) Total	Mold Compound	% ot Total Weight	51.24
						EME-	Silica, fused	60676-86-0	90.00	
Silica, fused	60676-86-0	Mold Compound	46.116	10.976	461,160	G770HCD	Pasin (NILD # 500.022.5)	Trada Coarat	4.95	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.485	0.591	24,851	Epox	Phonolic Rosin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	2.465	0.037	1 537		Carbon Black	1222-96-4	4.05	
Copper	7440-50-8	Lead Frame	38 576	0.037	385 763		Calbon Diack	Total	100.00	J
Тір	7440-30-8	Lead Frame	0.000	9.101	365,765	0.42	(mg) Total	I ord Frame	100.00	20.6
Silver	7440-31-5	Lead Frame	0.033	0.024	7.544	9.42	(ilig) Totai	7440 E0 9		39.0
Zinc	7440-22-4	Lead Frame	0.734	0.180	7,344	194+AG	Tin	7440-30-6	97.42	
Chromium	7440-00-0	Lead Frame	0.071	0.017	990		Silvor	7440-31-5	1.01	
Cilibinidin	7440-47-3	Die Attach	0.099	0.024	7 332		Zinc	7440-22-4	0.19	
Acrulate resins Proprietany	Trade Secret	Die Attach	0.155	0.175	1,552		Chromium	7440-66-6	0.18	
Tracted silico	Trade Secret	Die Attach	0.103	0.040	1,032		Cilioniani	7440-47-5	0.20	J
Hotoropyolio organio compound	Trade Secret	Die Attach	0.019	0.004	100	0.00	(mm m) T = 4 = 1	Dia Attach	100.00	0.04
	7440.04.0	Ohim (Dia)	0.019	0.004	100	0.22	(mg) Total	Die Attach	% of 1 otal weight	0.94
Silicon	7440-21-3	Chip (Die)	3.610	0.859	36,100	82001	Silver	7440-22-4	78	
Guid	7440-57-5	Wile Bolio	2.140	0.350	14,700		Activiate resiris Proprietary	Trade Secret	18	
1111	7440-31-5 Plating 0	n external leads (pins) - Matte Tin/ annealed at 150°C for Thour	3.140	22,900	1 000 000	11-4-	Treated Silica	Trade Secret	2	
		TOTALS:	100.000	23.000	1,000,000	Hete	ocyclic organic compound	Trade Secret	2	J
	0.0238 g Tota	al Mass						l otal	100.00	
This semiconductor device and its homogenous materials Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2002/9	95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	0.86	Total (mg)	Chip (Die)	% of Total Weight	3.61
Compliance with the above EU Directives has been verified	d via internal design controls, su	pplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the of Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of re-	chemical substance is NOT an in date of this document, there is r egulatory concern for any regula	tentional ingredient in the semiconductor device no credible reason to believe that the unavoidabl tory scheme world-wide.	e and, to the be le impurity cor	est of Microch centration of	ip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 http://ul.com/global/eng/pages/offerings/industries/chemic	flammability standard for plastic cals/plastics/	s. You can access the UL iQTM family of databa	ises to obtain a	test report a	t	0.35	(mg) Total	Wire Bond	% of Total Weight	1.47
The protective "tubes" in which the specific product is shi box and certain "reels" may be made from PVC plastic.	pped are made from polyvinyl cl	hloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Gold	7440-57-5	100	
								Total	100 00	y I
Microchip Technology Incorporated believes the informatia devices in their original packing materials is true and corrr guarantee the completeness and accuracy of data in this for material suppliers. Supplier information is often protected raw material suppliers. Information is provided only as est These estimates do not include trace levels of dopants, mo	on in this form concerning subs cet to the best of its knowledge a orm because it has been compile from disclosure as trade secrets timates of the average weight of stals, and non-metal materials co	tances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro ed based on the ranges provided in Material Safe s and some information may not have been prov these parts and the average weight of anticipate ontained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol- ety Data Sheets vided by subco d significant to e finished parts	ed's semicon ogy Incorpora provided by ntract assem oxic metals co	ductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Inco in Microchip's quotations, sales order acknowledgement, a	warranty, express or implied, wit orporated and its subsidiaries ar and invoices.	th respect to the information provided in this de e contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	iited e provided	0.75	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.14
Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of (SGS) or of this Certificate of Compliance for semiconduct	changes to Material Content Dec the users' reliance on the inform tor products.	clarations and shall not be liable for any damage ation in Material Content Declarations (MCD) or	es, direct or ind independent th	lirect, conseq ird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	-
						23.800				100.000

MICROCHIP Semiconductor Device	Type: MD 08 (Lead)	DFN 4x4 (M8)	Termiı Co	nation Base / pper Alloy (C	Alloy: :u)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	maa	19.20	(mg) Total	Mold Compound	% ot Total Weight	42.76
		•	- v			EM-	Silica fused	60676-86-0	90.00	
Silica, fused	60676-86-0	Mold Compound	38.484	17.279	384,840	G770HCD	Cinida, 10000		00.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.074	0.931	20,739	Epox	v Resin (NLP # 500-033-5)	Trade Secret	4.85	
Carbon Plack	1222 96 4	Mold Compound	2.074	0.931	20,739	-	Phenolic Resin	I rade Secret	4.85	
Calbon Black	7440 50 8	Mold Compound	0.120	0.056	1,203	-	Carbon Black	1333-80-4	0.30	l
Copper	7440-50-8	Lead Frame	44.970	20.191	449,695			l otal	100.00	
Ifon	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	194+AG	Copper	7440-50-8	95.54	
ZIIIC	7440-66-6	Lead Frame	0.059	0.026	200	-	liton	7439-89-6	2.30	
Phospholous	7723-14-0	Leau Flame	0.039	0.017	0.126	-	Zine	7440-22-4	1.91	
Acrulate resins Proprietany	Trade Secret	Die Attach	0.913	0.410	2 106	-	Phosphorous	7440-00-0	0.13	
Tracted eilies	Trade Secret	Die Attach	0.211	0.095	2,100	-	FIIOSPIIOIOUS	1123-14-0 T-4-1	0.00	l
Hotoropyelie organie compound	Trade Secret	Die Attach	0.023	0.011	234	4.05	(I otal	100.00	4.47
	Tiade Seclet	Die Allach Obie (Die)	0.023	0.011	234	1.05	(mg) Total	Die Attach	% of Total Weight	1.17
Silicon	7440-21-3	Chip (Die)	5.470	2.456	54,700	82001	Silver	7440-22-4 Teada Oceant	/8	
Guid	7440-37-5		0.320	0.144	3,200	-	Activiate resins Proprietary	Trade Secret	18	
101	7440-31-5	Plating on external leads (pins) - Matter Int/ annealed at 150°C for 1 hour	3.210	45.425	1 011 700	11-4-	Treated silica	Trade Secret	2	
		TUTALS:	101.170	45.425	1,011,700	Hete	rocyclic organic compound	Trade Secret	2	
In semiclonoutor device and its nomogenous materials Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified	via internal design con	re 2002/99/EC (Kons Directive), ED Directive 2011/05/E0	(ROHS Recast	Directive) and	a with EU	2.46	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	5.47
Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of re	date of this document, t gulatory concern for an	here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	le impurity cor	icentration of	the			1		
Molding compounds used by Microchip meet the UL94 V01 http://ul.com/global/eng/pages/offerings/industries/chemic	als/plastics/	or plastics. You can access the UL IQIM family of databa	ises to obtain a	a test report a	t	0.14	(mg) Total	Wire Bond	% of Total Weight	0.32
The protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic.	oped are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the informatic devices in their original packing materials is true and corre guarantee the completeness and accuracy of data in this for material suppliers. Supplier information is often protected raw material suppliers. Information is provided only as est These estimates do not include trace levels of dopants, me	on in this form concerni tot to the best of its kno rrm because it has been from disclosure as trad imates of the average w ttals, and non-metal mat	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe secrets and some information may not have been pro eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ety Data Sheets vided by subco d significant to e finished parts	ed's semicor ogy Incorpora provided by ontract assem oxic metals co s.	nductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any or product warranties provided by Microchip Technology Inco in Microchip's quotations, sales order acknowledgement, a	warranty, express or imp prporated and its subsid and invoices.	blied, with respect to the information provided in this de iaries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These ar	rited e provided	1.44	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.21
Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of t (SGS) or of this Certificate of Compliance for semiconduct	changes to Material Cor he users' reliance on the or products.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or ind independent ti	direct, consec hird party test	quential or reports		Tin	7440-31-5	100.00	
						1		Total	100.00	
						45 425				100 000

MICROCHIP Semiconductor Device Type	e: MF 8 (Lead) I	DFN-S 6x5 mm (A6 / AW)	Termir Coj	ation Base A oper Alloy (C	Alloy: u)		Package Homo 8.1 Electronics (e.	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	37.77	(mg) Total	Mold Compound	% ot Total Weight	49.12
						EME-	Silica, fused	60676-86-0	90.00	
Silica, tused	60676-86-0	Mold Compound	44.208	33.996	442,080	G770HCD	Peoin (NLD # 500.022.5)	Trada Coarat	4.95	
Epoxy Resill (NLP # 500-033-5) Phenolic Resin	Trade Secret	Mold Compound	2.302	1.032	23,023	Epos	Phenolic Resin	Trade Secret	4.65	
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		Carbon Bidon	Total	100.00	1
Tin	7440-31-5	Lead Frame	0.110	0.085	1.103	33.91	(mg) Total	Lead Frame	% of Total Weight	44.1
					.,	EFTEC64T +	(ing) rotai	Eoud Franio	// for rotal froight	
Silver	7440-22-4	Lead Frame	0.840	0.646	8,401	Aq	Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.079	0.061	794		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.110	0.085	1,103		Silver	7440-22-4	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	0.074	0.057	738		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.008	0.006	82			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	8200T	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.170	0.131	1,700		Acrylate resins Proprietary	Trade Secret	18	
lin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.330	2.561	33,300		Treated silica	Trade Secret	2	
		TOTALS:	100.000	76.900	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	
	0.0769	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	bly with EU Directiv	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	2.21	Total (mg)	Chip (Die)	% of Total Weight	2.87
Compliance with the above EU Directives has been verified via i	nternal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulat	cal substance is No of this document, t ory concern for an	OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidabl y regulatory scheme world-wide.	e and, to the be le impurity con	est of Microch centration of	ip the		<u> </u>	Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	ability standard fo astics/	r plastics. You can access the UL iQTM family of databa	ses to obtain a	test report a	t	0.13	(mg) Total	Wire Bond	% of Total Weight	0.17
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concernin the best of its know ecause it has been disclosure as trade s of the average we and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe secrets and some information may not have been prov eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technolo ety Data Sheets vided by subco d significant to e finished parts	ed's semicon ogy Incorpora provided by ntract assem xic metals co	ductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid voices.	plied, with respect to the information provided in this de laries are contained in Microchip's standard terms and o	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	2.56	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.33
Microchip disclaims any duty to notify users of updates or chan otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Con ers' reliance on the oducts.	tent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or ind independent th	lirect, conseq ird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	U I
						70.000			.00.00	100.000

MICROCHIP Semiconductor Device Ty	pe: MF 10 (Lead)) DFN 3x3 mm (E2 / E.)	Termin Cop	ation Base A oper Alloy (C	lloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Pagia Sukatanga	CAS Number	"Contained In" Sub-Component	% Total Weight	malport		19.35	(mg) Total	Mold Compound	% ot Total Weight	80.96
Basic Substance	CAS Number	ous component	Weight	ing/part	ppin	EME-				
Silica, fused	60676-86-0	Mold Compound	72.864	17,414	728.640	G770HCD	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.927	0.938	39,266	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.927	0.938	39,266		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.243	0.058	2,429		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	3.544	0.847	35,444			Total	100.00	
Iron	7439-89-6	Lead Frame	0.087	0.021	872	0.89	(mg) Total	Lead Frame	% of Total Weight	3.71
Silver	7440-22-4	Lead Frame	0.071	0.017	707	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.005	0.001	46		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.003	0.001	31		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.491	0.117	4,914		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.113	0.027	1,134		Phosphorous	7723-14-0	0.08	
Treated silica	Trade Secret	Die Attach	0.013	0.003	126			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.013	0.003	126	0.15	(mg) Total	Die Attach	% of Total Weight	0.63
Silicon	7440-21-3	Chip (Die)	9.260	2.213	92,600	8200T	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.820	0.196	8,200	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	4.620	1.104	46,200		Treated silica	Trade Secret	2	
		TOTALS:	100.000	23.900	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	
	0 0239	a Total Mass						Total	100.00	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified vi If a chemical substance is absent from the list above, the che Technology Incorporated's knowledge and belief as of the da chemical substance, if any, is not below the threshold of reg	a internal design con mical substance is No le of this document, t llatory concern for an	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devicc here is no credible reason to believe that the unavoidabl y regulatory scheme world-wide.	e and, to the be le impurity con	est of Microch centration of	ip the	2.21	Silicon	7440-21-3 Total	100 100.00	5.26
Molding compounds used by Microchip meet the UL94 V0 flat http://ul.com/global/eng/pages/offerings/industries/chemicals	nmability standard fo /plastics/	or plastics. You can access the UL iQTM family of databa	ses to obtain a	test report at	t	0.20	(mg) Total	Wire Bond	% of Total Weight	0.82
The protective "tubes" in which the specific product is shipp box and certain "reels" may be made from PVC plastic.	ed are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this form material suppliers. Supplier information is often protected for raw material suppliers. Information is provided only as estim These estimates do not include trace levels of dopants, meta	in this form concerni to the best of its know because it has been on disclosure as trade ates of the average we s, and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technolo ty Data Sheets vided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by ntract assemi xic metals co	ductor ted cannot raw blers and mponents.			Total	100.00	
Microchip Technology Incorporated does not provide any wa product warranties provided by Microchip Technology Incorp in Microchip's quotations, sales order acknowledgement, and	ranty, express or imp orated and its subsid invoices.	blied, with respect to the information provided in this de iaries are contained in Microchip's standard terms and c	claration. The e conditions of s	exclusive, lim ale. These are	ited provided	1.10	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.62
Microchip disclaims any duty to notify users of updates or ch otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	anges to Material Cor users' reliance on the products.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	es, direct or inc independent th	lirect, conseq ird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	
						23,900				100.000

			Termir Co	ation Base A oper Alloy (C	ulloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: a.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: MNY 08 (Lead)	DFN 2x3x0.5mm (5Q)								e4
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	maa	8.40	(mg) Total	Mold Compound	% ot Total Weigh	t 59.97
Silica vitreous (or fused)	60676-86-0	Mold Compound	50 975	7 136	509 745	G770HCD	Silica, vitreous (or fused)	60676-86-0	85.00	7
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	1	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	t 33.62
Phosphorous	7723-14-0	Lead Frame	0.084	0.012	841	C194+AG	Copper	7440-50-8	97.30	
Zinc (Metal)	7440-44-0	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)	7440-44-0	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	t <u> </u>
Silicon	7440-21-3	Chip (Die)	4.010	0.561	40,100	8200T	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	7440-05-03	Plating on external leads (pins)	0.014	0.002	139	Heter	ocyclic organic compound	Trade Secret	2	
Gold	7440-57-5	Plating on external leads (pins)	0.004	0.001	45			Total	100.00	
		TOTAL	S: 100.000	14.000	1,000,000	0.56	Total (mg)	Chip (Die)	% of Total Weight	<u>t</u> 4.01
	0.0140 a Te	otal Mass					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 v	via internal design controls, su	upplier declarations, and /or analytical test data	1.			0.11	(mg) Total	Wire Bond	% of Total Weigh	t 0.77
If a chemical substance is absent from the list above, the ch Incorporated's knowledge and belief as of the date of this do any, is not below the threshold of regulatory concern for an	emical substance is NOT an in ocument, there is no credible r y regulatory scheme world-wid	tentional ingredient in the semiconductor dev eason to believe that the unavoidable impurity le.	ice and, to the besi concentration of t	of Microchip ne chemical s	Technology ubstance, if		Doped Gold	7440-57-5	100	
Molding compounds used by Microchip meet the UL94 V0 fla http://ul.com/global/eng/pages/offerings/industries/chemica	ammability standard for plasti Is/plastics/	cs. You can access the UL iQTM family of data	bases to obtain a te	est report at				Total	100.00	T
The protective "tubes" in which the specific product is shipp and certain "reels" may be made from PVC plastic.	oed are made from polyvinyl o	hloride (PVC) plastic. "Window envelopes" use	ed to hold the pack	ing slip on the	e outer box	0.06	(mg) Total	Plating on external leads (pins)	% of Total Weigh	t 0.43
Microchip Technology Incorporated believes the information in their original packing materials is true and correct to the the completeness and accuracy of data in this form because Supplier information is often protected from disclosure as t Information is provided only as estimates of the average we include trace levels of dopants, metals, and non-metal mate	n in this form concerning subs best of its knowledge and beli- it has been compiled based d ade secrets and some inform ght of these parts and the aver rials contained within silicon of	tances restricted by RoHS in Microchip Techn f, as of the date listed in this form. Microchip n the ranges provided in Material Safety Data 5 ation may not have been provided by subcontr rage weight of anticipated significant toxic me levices (silicon IC) in the finished parts.	ology Incorporated Fechnology Incorp Sheets provided by act assemblers an tals components. 1	's semicondu orated cannot raw material d raw material hese estimate	ctor devices guarantee suppliers. suppliers. es do not		Nickel	7440-02-0	95.73	
Microchip Technology Incorporated does not provide any w warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, and i	arranty, express or implied, w and its subsidiaries are contai nvoices.	th respect to the information provided in this oned in Microchip's standard terms and conditi	leclaration. The ex ons of sale. These	clusive, limite are provided i	d product n		Palladium	7440-05-03	3.23	
Microchip disclaims any duty to notify users of updates or c otherwise, suffered by users or third parties as a result of th or of this Certificate of Compliance for semiconductor produ	hanges to Material Content De e users' reliance on the inforn ucts.	clarations and shall not be liable for any dama nation in Material Content Declarations (MCD) o	ges, direct or indir or independent thir	ect, conseque d party test re	ntial or ports (SGS)		JGPSSI (D02) (Gold)	7440-57-5	1.04	
						1	·	Total	100.00	<u>,</u>
						14 000				100.000

MICROCHIP Semiconductor Device T	ype: QAE 8 (Lead	TDFN-S 6x5x0.8mm (U3)	Termir Co	nation Base A oper Alloy (C	Alloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: .g. pc boards, display	ys)	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	EME- G770HCD	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.551	1.883	25.511	Epox	v Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.551	1.883	25,511		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	1		Total	100.00	4
Iron	7439-89-6	Lead Frame	0.940	0.694	9 400	29.52	(mg) Total	Lead Frame	% of Total Weight	40
Silver	740-22-4	Lead Frame	0.762	0.562	7,620	CDA194+Ag	(ing) rotai	7440-50-9		40
Zipc	7440-22-4	Lead Frame	0.050	0.002	500	CDA134TAg	Iron	7440-50-6	2.25	
Phoenborous	7440-00-0	Lead Frame	0.030	0.037	220	-	libin	7439-09-0	2.35	
Phospholous Silver (Ag)	7123-14-0	Leau Flame	0.033	0.024	330	-	Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.704	0.520	7,040	-	Zinc	7440-66-6	0.13	
	Trade Secret	Die Attach	0.150	0.110	1,496	-	Phosphorous	7723-14-0	0.08	J
Copper (Cu)	7440-50-8	Die Allach	0.026	0.019	204			lotal	100.00	
Sliicofi	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	8340	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	
In semiconductor device and its homogenous materials c Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified v If a chemical substance is absent from the list above, the ch- Technology Incorporated's knowledge and belief as of the di- chemical substance if any is not below the threshold of reg	via internal design con emical substance is Nu ate of this document, t	trols, supplier declarations, and /or analytical test data. Tan intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab v regulatory scheme world-wide	e and, to the bolic impurity cor	est of Microch	ip the	3.79	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	5.14
Molding compounds used by Microchip meet the UL94 V0 fla http://ul.com/global/eng/pages/offerings/industries/chemical	ammability standard fo Is/plastics/	r plastics. You can access the UL iQTM family of databa	ases to obtain a	test report at	t	0.20	(mg) Total	Wire Bond	% of Total Weight	0.27
The protective "tubes" in which the specific product is shipp box and certain "reels" may be made from PVC plastic.	oed are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	I to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correc guarantee the completeness and accuracy of data in this fori material suppliers. Supplier information is often protected fr raw material suppliers. Information is provided only as estim These estimates do not include trace levels of dopants, meta	in this form concerni t to the best of its known m because it has been om disclosure as trad nates of the average wals, and non-metal mat	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been prov sight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ety Data Sheets vided by subco ed significant to e finished parts	ed's semicon ogy Incorpora provided by ntract assemi xic metals co	ductor ated cannot raw blers and omponents.			Total	100.00	2
Microchip Technology Incorporated does not provide any wa product warranties provided by Microchip Technology Incor in Microchip's quotations, sales order acknowledgement, an	arranty, express or imp porated and its subsid d invoices.	lied, with respect to the information provided in this de iaries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	0.82	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	% of Total Weight	1.11
Microchip disclaims any duty to notify users of updates or cl otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	hanges to Material Cor e users' reliance on th r products.	tent Declarations and shall not be liable for any damag e information in Material Content Declarations (MCD) or	es, direct or ind independent th	lirect, conseq iird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	-
						73.800				100.000

	70e: Q2AE 08/1	ead) TDFN-S 5x8x0.8mm (S9)	Termir Co	nation Base A oper Alloy (C	Alloy: :u)		Package Hom 8.1 Electronics (e	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			50.55	()= ()			
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	52.55	(mg) I otal	Mold Compound	% of 1 otal weight	t 37.14
Fused Silica	60676-86-0	Mold Compound	32.869	46.509	328,689	CEL-9240HF	Fused Silica	60676-86-0	88.50	
Epoxy Resin 1	Trade Secret	Mold Compound	2.414	3.416	24,141		Epoxy Resin	Trade Secret	6.50	
Phenol Resin	Trade Secret	Mold Compound	1.764	2.496	17,642		Phenol Resin	Trade Secret	4.75	
Carbon Black	1333-86-4	Mold Compound	0.093	0.131	929		Carbon Black	1333-86-4	0.25	
Copper	7440-50-8	Lead Frame	47.490	67.199	474,904			Total	100.00	
Silver	7440-22-4	Lead Frame	3.287	4.651	32,867	73.82	(mg) Total	Lead Frame	% of Total Weight	52.17
Iron	7439-89-6	Lead Frame	1.143	1.617	11,425	CDA194+Ag	Copper	7440-50-8	91.03	
Zinc	7440-66-6	Lead Frame	0.177	0.251	1,774		Silver	7440-22-4	6.30	
Phosphorus	7723-14-0	Lead Frame	0.073	0.103	730		Iron	7439-89-6	2.19	
Silver	7440-22-4	Die Attach	0.963	1.362	9,625		Zinc	7440-66-6	0.34	
Acrylic Resin	Trade secret	Die Attach	0.106	0.150	1,063		Phosphorus	7723-14-0	0.14	
Polybutadiene derivative & copolymer	Trade secret	Die Attach	0.081	0.115	813			Total	100.00	-
Acrylate	Trade secret	Die Attach	0.069	0.097	688	1.77	(mg) Total	Die Attach	% of Total Weight	1.25
Epory Resin 2	Trade secret	Die Attach	0.031	0.044	313	EN4900G	Silver	7440-22-4	77.00	1
Silicon	7440-21-3	Chip (Die)	7 800	11 037	78 000	211430000	Acrylic Resin	Trade secret	8.50	
Gold	7440-57-5	Wire Bond	0.040	0.057	400	Polybutadi	ene derivative & conolymer	Trade secret	6.50	
Tin	7440-31-5	Plating on external leads (nins) - Matte Tin / annealed at 150°C for 1 hour	1 600	2 264	16,000	. orybuildu	Acrylate	Trade secret	5.50	
111	7440-31-3	Flating of external leads (pins) - Watter hit/ antiealed at 150 C for 1 hour	100 000	1/1 500	1 000 000		Enow Posin	Trade secret	2.50	
	0 4 4 4 5	Total Mana	100.000	141.500	1,000,000		LPOXy Resil	Total	2.50	<u> </u>
	0.1415	g Total Mass						Total	100.00	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	a internal design con	trols, supplier declarations, and /or analytical test data.	(KOHS Recast	Directive) and	d with EO	11.04	Total (mg)	Chip (Die)	% of Total Weight	t 7.8
		·····, ····, ····, ·····, ·····, ·····, ·····, ·····, ·····, ·····, ·····, ·····, ·····, ·····, ·····								
If a chemical substance is absent from the list above, the che Technology Incorporated's knowledge and belief as of the da chemical substance, if any, is not below the threshold of reg	mical substance is N te of this document, t latory concern for ar	OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the b le impurity cor	est of Microch centration of	nip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 fla http://ul.com/global/eng/pages/offerings/industries/chemicals	mmability standard fo s/plastics/	or plastics. You can access the UL iQTM family of databa	ses to obtain a	i test report a	t	0.06	(mg) Total	Wire Bond	% of Total Weight	t 0.04
The protective "tubes" in which the specific product is shipp box and certain "reels" may be made from PVC plastic.	ed are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this forn material suppliers. Supplier information is often protected fro raw material suppliers. Information is provided only as estim These estimates do not include trace levels of dopants, meta	in this form concerni to the best of its kno n because it has been om disclosure as trad ates of the average w Is, and non-metal ma	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ety Data Sheets vided by subco d significant to finished parts	ed's semicor ogy Incorpora provided by ntract assem oxic metals co	nductor ated cannot raw blers and omponents.			Total	100.00	-
Microchip Technology Incorporated does not provide any wa product warranties provided by Microchip Technology Incorp in Microchip's quotations, sales order acknowledgement, and	rranty, express or imporated and its subsic I invoices.	blied, with respect to the information provided in this de liaries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These ar	iited e provided	2.26	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.6
Microchip disclaims any duty to notify users of updates or ch otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	anges to Material Con users' reliance on th products.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or ind independent th	lirect, consec hird party test	quential or reports		Tin	7440-31-5	100.00	
						141.500		Total	100.00	100.000

MICROCHIP Semiconductor Devi	e Type: QAF 08 (Lead) T	DFN-S 6x5x0.8 mm (9A)	Termir Co _l	nation Base A pper Alloy (C	ulloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e4
Basic Substance	CAS Number	Sub-Component	Weight	ma/nart	nnm	38 79	(mg) Total	Mold Compound	% of Total Weight	51 17
Silico vitroous (or fund)	60676.96.0	Mold Compound	42.405	22,060	424.045	G770HT	Silica vitroous (or fused)	60676-86-0	85.00	01.17
Enoxy Resin	Trade Secret	Mold Compound	43.493	3 374	434,945	Grioni	Enovy 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		Carbon Black	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	C194 PPF-	Copper	7440-50-8	97 30	00.12
Zinc (Metal)	7440-44-0	Lead Frame	0.058	0.044	581	NIF UAU	Iron	7/30-80-6	2 30	
Silver	7440-22-4	Die Attach	1 051	0.797	10 508		Phosphorous	7723-14-0	0.25	
Enoxy resin	Trade Secret	Die Attach	0.284	0.215	2 840		Zinc (Metal)	7440-44-0	0.15	
Metal oxide	Trade Secret	Die Attach	0.043	0.032	426		Zirie (Wetar)	Total	100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.043	0.032	426	1.09	(mg) Total	Dio Attach	% of Total Weight	1 /2
Silicon	7440-21-3	Chip (Die)	8 220	6.231	82 200	8200	Silvor	7440-22-4	74	1.44
Gold	7440-21-5	Wire Bond	0.220	0.201	2,200	0230	Epony resin	Trada Saarat	20	
Nickel	7440-02-0	Plating on external leads (pins)	0.200	0.197	2,000		Metal oxide	Trade Secret	20	
Balladium	7440-02-0	Plating on external leads (pins)	0.130	0.150	1,305			06.49.0	3	
Gold	7440-03-03	Plating on external leads (pins)	0.011	0.008	105		Gamma-butyrolactone	90-40-0 Total	3 100.00	
0010	7440-57-5		100.000	75 800	1 000 000	6.00	Total (mg)	Chin (Dia)	% of Total Waight	0 11
		TOTALS:	100.000	75.000	1,000,000	0.23	i otal (mg)	Chip (Die)	% of Total weight	8.22
	0.0758 g To	otal Mass								
This semiconductor device and its homogenous materia Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	s comply with EU Directive 2002/9).	5/EC (RoHS Directive), EU Directive 2011/65/EU (F	RoHS Recast Di	irective) and w	ith EU		Doped Silicon	7440-21-3 Total	100 100.00	
This semiconductor device and its homogenous materia Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive Compliance with the above EU Directives has been verifi If a chemical substance is absent from the list above, the Incorporated's knowledge and belief as of the date of this avy is not below the threshold of regulatory concern for	is comply with EU Directive 2002/). ed via internal design controls, su chemical substance is NOT an in document, there is no credible r	55/EC (RoHS Directive), EU Directive 2011/65/EU (F pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device a ason to believe that the unavoidable impurity cor	RoHS Recast Di and, to the besi incentration of t	irective) and w t of Microchip he chemical s	ith EU Technology ubstance, if	0.20	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.26
This semiconductor device and its homogenous materia Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive Compliance with the above EU Directives has been verifi If a chemical substance is absent from the list above, the incorporated's knowledge and belief as of the date of this any, is not below the threshold of regulatory concern for Molding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chem	s comply with EU Directive 2002/). ed via internal design controls, su chemical substance is NOT an in document, there is no credible r any regulatory scheme world-wid 0 flammability standard for plastic icals/plastics/	55/EC (RoHS Directive), EU Directive 2011/65/EU (F pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device a eason to believe that the unavoidable impurity cor e. s. You can access the UL iQTM family of database	RoHS Recast Di and, to the besi icentration of the es to obtain a te	irective) and w t of Microchip he chemical si est report at	ith EU Technology ubstance, if	0.20	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100 100.00	0.26
This semiconductor device and its homogenous materia Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive Compliance with the above EU Directives has been verifi If a chemical substance is absent from the list above, the Incorporated's knowledge and belief as of the date of this any, is not below the threshold of regulatory concern for Molding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chem The protective "tubes" in which the specific product is s and certain "reels" may be made from PVC plastic.	is comply with EU Directive 2002/). ed via internal design controls, su chemical substance is NOT an in document, there is no credible re any regulatory scheme world-wild O flammability standard for plastic icals/plastics/	55/EC (RoHS Directive), EU Directive 2011/65/EU (F pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device a pason to believe that the unavoidable impurity cor e. s. You can access the UL iQTM family of database hloride (PVC) plastic. "Window envelopes" used to	RoHS Recast Di and, to the besi ccentration of ti es to obtain a te o hold the pack	rective) and w t of Microchip he chemical s est report at ing slip on the	ith EU Technology ubstance, if e outer box	0.20	(mg) Total Doped Gold (mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins)	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.26
This semiconductor device and its homogenous materia Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive Compliance with the above EU Directives has been verifi If a chemical substance is absent from the list above, the Incorporated's knowledge and belief as of the date of this any, is not below the threshold of regulatory concern for Molding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chem The protective "tubes" in which the specific product is s and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the informat in their original packing materials is true and correct to t the completeness and accuracy of data in this form beca Supplier information is provided only as estimates of the average include trace levels of dopants, metals, and non-metal m	is comply with EU Directive 2002/). ed via internal design controls, su chemical substance is NOT an in document, there is no credible m any regulatory scheme world-wid D flammability standard for plastic icals/plastics/ hipped are made from polyvinyl cl tion in this form concerning subs he best of its knowledge and belie use it has been compiled based o s trade secrets and some information weight of these parts and the ave- aterials contained within silicon d	55/EC (RoHS Directive), EU Directive 2011/65/EU (F pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device a pason to believe that the unavoidable impurity cor e. s. You can access the UL iQTM family of database hloride (PVC) plastic. "Window envelopes" used to tances restricted by RoHS in Microchip Technolog f, as of the date listed in this form. Microchip Tech tion may not have been provided by subcontract age weight of anticipated significant toxic metals evices (silicon IC) in the finished parts.	RoHS Recast Di and, to the best ccentration of the es to obtain a te b hold the pack y Incorporated mology Incorp tes provided by assemblers an components. 1	rective) and w t of Microchip he chemical si est report at ing slip on the l's semicondu orated cannot raw material i d raw material fhese estimate	ith EU Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. suppliers. so do not	0.20	(mg) Total Doped Gold (mg) Total (mg) Total Nickel	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0	100 100.00 % of Total Weight 100 100.00 % of Total Weight 94.50	0.26
This semiconductor device and its homogenous materia Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive Compliance with the above EU Directives has been verifi If a chemical substance is absent from the list above, the Incorporated's knowledge and belief as of the date of this any, is not below the threshold of regulatory concern for Molding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chem The protective "tubes" in which the specific product is s and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the informa in their original packing materials is true and correct to t the completeness and accuracy of data in this form beca Supplier information is often protected from disclosure a Information is provided only as estimates of the average include trace levels of dopants, metals, and non-metal m Wicrochip Technology Incorporated does not provide an warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, a	is comply with EU Directive 2002/:). ed via internal design controls, su chemical substance is NOT an in document, there is no credible rr any regulatory scheme world-wid of flammability standard for plastic icals/plastics/ hipped are made from polyvinyl cl tion in this form concerning subs be best of its knowledge and belie use it has been compiled based o s trade secrets and some informat weight of these parts and the ave aterials contained within silicon d r warranty, express or implied, wi ed and its subsidiaries are contained in invoices.	55/EC (RoHS Directive), EU Directive 2011/65/EU (F pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device a bason to believe that the unavoidable impurity cor e. s. You can access the UL iQTM family of database hloride (PVC) plastic. "Window envelopes" used to tances restricted by RoHS in Microchip Technolog f, as of the date listed in this form. Microchip Tech not the ranges provided in Material Safety Data Shee titon may not have been provided by subcontract : rage weight of anticipated significant toxic metals evices (silicon IC) in the finished parts. th respect to the information provided in this decl- ned in Microchip's standard terms and conditions	and, to the besi incentration of the es to obtain a te o hold the pack by Incorporated by Incorporated by semblers and components. The aration. The ex of sale. These	rective) and w t of Microchip he chemical si est report at ing slip on the l's semicondu orated cannot raw material d raw material fhese estimate clusive, limite are provided i	rith EU Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. as do not d product n	0.20	(mg) Total Cmg) Total Cmg) Total Cmg) Total Cmg) Total Palladium	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0 7440-02-0	100 100.00 % of Total Weight 100 100.00 % of Total Weight 94.50 5.00	0.26
This semiconductor device and its homogenous materia Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive Compliance with the above EU Directives has been verifi f a chemical substance is absent from the list above, the ncorporated's knowledge and belief as of the date of this any, is not below the threshold of regulatory concern for Wolding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chem The protective "tubes" in which the specific product is s and certain "reels" may be made from PVC plastic. Wicrochip Technology Incorporated believes the informa n their original packing materials is true and correct to t the completeness and accuracy of data in this form beca Supplier information is often protected from disclosure a nformation is provided only as estimates of the average nclude trace levels of dopants, metals, and non-metal m Wicrochip Technology Incorporated does not provide an warranties provided by Microchip Technology Incorporated warranties provided by Microchip Technology Incorpora- dustrochip 's quotations, sales order acknowledgement, a Wicrochip disclaims any duty to notify users of updates of otherwise, suffered by users or third parties as a result o or of this Certificate of Compliance for semiconductor pu	s comply with EU Directive 2002/:). ed via internal design controls, su chemical substance is NOT an in document, there is no credible rr any regulatory scheme world-wid of flammability standard for plastic icals/plastics/ hipped are made from polyvinyl cl tion in this form concerning subs he best of its knowledge and belie use it has been compiled based o s trade secrets and some informative aterials contained within silicon d r warranty, express or implied, wi ed and its subsidiaries are contain in invoices. The baser' reliance on the inform oducts.	55/EC (RoHS Directive), EU Directive 2011/65/EU (F pplier declarations, and /or analytical test data. tentional ingredient in the semiconductor device a sason to believe that the unavoidable impurity cor e. s. You can access the UL iQTM family of database hloride (PVC) plastic. "Window envelopes" used to tances restricted by RoHS in Microchip Technolog f, as of the date listed in this form. Microchip Tech not the ranges provided in Material Safety Data Shee tion may not have been provided by subcontract a rage weight of anticipated significant toxic metals evices (silicon IC) in the finished parts. th respect to the information provided in this decl. ned in Microchip's standard terms and conditions clarations and shall not be liable for any damages ation in Material Content Declarations (MCD) or in	RoHS Recast Di and, to the besi icentration of the es to obtain a te b hold the pack y Incorporated nuology Incorp its provided by assemblers and components. The aration. The ex of sale. These , direct or indir dependent thir	rective) and w t of Microchip he chemical si est report at ing slip on the 'raw material d raw material frese estimate clusive, limite are provided i ect, conseque d party test re	ith EU Technology ubstance, if e outer box ctor devices guarantee suppliers. suppliers. suppliers. so do not d product n ntial or ports (SGS)	0.20	(mg) Total Doped Gold (mg) Total (mg) Total Nickel Palladium Gold	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0 7440-02-0 7440-05-03 7440-57-5	100 100.00 % of Total Weight 100 100.00 % of Total Weight 94.50 5.00	0.26
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Semiconductor Device Type: MUY 08 (Lead) UDFN 2x3x0.5mm (6Q) "Contained In"			Termin Co	nation Base / pper Alloy (C	Alloy: Cu)		Package Homo 8.1 Electronics (e.	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e4	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	nnm	5.37	(mg) Total	Mold Compound	% ot Total Weight	67.95
Dasic Substance	CAO Number		// rotal froight	ing/part	ppin	EME-	Silica fused	60676-86-0	90.00	
Silica, fused	60676-86-0	Mold Compound	61.155	4.831	611,550	G770HCD	Silica, Iuseu	00070-80-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.296	0.260	32,956	Epoxy	/ Resin (NLP # 500-033-5)	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.296	0.260	2 039	-	Carbon Black	1333-86-4	4.65	
Copper	7440-50-8	Lead Frame	20 779	1.642	207 786	-	Ourbon Black	Total	100 00	
Tin	7440-31-5	Lead Frame	0.053	0.004	533	1.69	(mg) Total	Lead Frame	% of Total Weight	21.33
						EFTEC64T +	(,,,,			
Silver	7440-22-4	Lead Frame	0.406	0.032	4,063	Ag	Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.038	0.003	384		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.053	0.004	533		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.911	0.151	19,110		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.441	0.035	4,410		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.049	0.004	490			Total	100.00	
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	8200T	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.750	0.059	7,500		Acrylate resins Proprietary	Trade Secret	18	
NICKEI	7440-02-0	Plating on external leads (pins)	0.163	0.013	1,627	Hotor	I reated silica	Trade Secret	2	
	7440-05-05	Plating on external leads (pins)	0.003	0.000	10	Helen	ocyclic organic compound	Trade Secret	400.00	
	/ 64641 /=: 1 / =: 1		0.002	().()())	10			Iotal	100.00	
	1110 01 0		ALC: 100.000	7 000	1 000 000	0.50	T-1-1 (Ohin (Din)	0/ of Total Mainha	7.05
his semiconductor device and its homogenous materials c	0.0079 g To omply with EU Directive 2002/95/	tal Mass EC (RoHS Directive), EU Directive 2011/65/EU	ALS: 100.000 (RoHS Recast Directive)	7.900 and with EU D	1,000,000 Directive	0.58	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	7.35
his semiconductor device and its homogenous materials of 2007/2007/2007/2007/2007/2007/2007/2007	0.0079 g To omply with EU Directive 2002/95/ via internal design controls, supp	tal Mass EC (RoHS Directive), EU Directive 2011/65/EU plier declarations, and /or analytical test data.	ALS: 100.000 (RoHS Recast Directive)	7.900 and with EU D	1,000,000 Directive	0.58	Total (mg) Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	7.35 0.75
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bis semiconductor device and its homogenous materials of 002/53/EC (End-of-Life Vehicles (ELV) Directive). 002/53/EC (End-of-Life Vehicles (ELV) Directive). 012/53/EC (ELV) Directive). 012	0.0079 g To omply with EU Directive 2002/95/ via internal design controls, supj emical substance is NOT an inter coument, there is no credible reas / scheme world-wide. ammability standard for plastics (s/plastics/ bed are made from polyvinyl chlor n in this form concerning substat ts knowledge and belief, as of the based on the ranges provided in l attion may not have been provide anticipated significant toxic met finished parts.	Tot tal Mass EC (RoHS Directive), EU Directive 2011/65/EU olier declarations, and /or analytical test data. attional ingredient in the semiconductor devic son to believe that the unavoidable impurity of .You can access the UL iQTM family of datab oride (PVC) plastic. "Window envelopes" user neces restricted by RoHS in Microchip Technolo a date listed in this form. Microchip Technolo Waterial Safety Data Sheets provided by raw ra d by subcontract assemblers and raw materia als components. These estimates do not inclu	ALS: 100.000 (RoHS Recast Directive) e and, to the best of Micro oncentration of the chem ases to obtain a test repo I to hold the packing slip ogy Incorporated's semii yu Incorporated cannot g naterial suppliers. Suppli I suppliers. Information i de trace levels of dopant	7.900 and with EU E pochip Technol ical substance rt at on the outer the conductor dev uarantee the c er information s provided on s, metals, and	1,000,000 Directive ogy e, if any, is not pox and certain vices in their completeness and h is often by as estimates of non-metal	0.58	Total (mg) 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) 7440-02-0	% of Total Weight 100 100.00 % of Total Weight 100 100 % of Total Weight 95.73	0.75
bis semiconductor device and its homogenous materials of 002/53/EC (End-of-Life Vehicles (ELV) Directive). Iompliance with the above EU Directives has been verified a chemical substance is absent from the list above, the ch icorporated's knowledge and belief as of the date of this de elow the threshold of regulatory concern for any regulator. Iolding compounds used by Microchip meet the UL94 V0 fl ttp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is ship reels" may be made from PVC plastic. Ilicrochip Technology Incorporated believes the informatio original packing materials is true and correct to the best of i couracy of data in this form because it has been compiled interials contained within silicon devices (silicon IC) in the licrochip Technology Incorporated does not provide any w rovided by Microchip Technology Incorporated and its sub rder acknowledgement, and invoices.	0.0079 g To 0.0079 g 0.0079 g To 0.0079 g 0.0079 g	Tot tal Mass EC (RoHS Directive), EU Directive 2011/65/EU olier declarations, and /or analytical test data. Ational ingredient in the semiconductor devic son to believe that the unavoidable impurity of a vou can access the UL iQTM family of datab oride (PVC) plastic. "Window envelopes" used notes restricted by RoHS in Microchip Technolo date listed in this form. Microchip Technolo date listed to this form. Microchip Technolo date spectry Data Sheets provided by raw r d by subcontract assemblers and raw materia als components. These estimates do not inclu respect to the information provided in this de hip's standard terms and conditions of sale."	ALS: 100.000 (RoHS Recast Directive) e and, to the best of Micro oncentration of the chem ases to obtain a test repo I to hold the packing slip ogy Incorporated cannot g naterial suppliers. Suppli I suppliers. Information i de trace levels of dopant claration. The exclusive, hese are provided in Mic	7.900 and with EU D pochip Technol ical substance rt at on the outer b conductor dev uarantee the c information s provided on s, metals, and limited produ rochip's quot	1,000,000 Directive ogy e, if any, is not box and certain rices in their completeness and is often ly as estimates of non-metal ct warranties ations, sales	0.58	Total (mg) Doped Silicon (mg) Total Doped Gold (mg) Total Nickel Palladium	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0 7440-02-0	% of Total Weight 100 100.00 % of Total Weight 100 100 % of Total Weight 95.73 3.23	0.75
is semiconductor device and its homogenous materials of 02/53/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 ch corporated's knowledge and belief as of the date of this dd low the threshold of regulatory concern for any regulator, obling compounds used by Microchip meet the UL94 V0 ff p://ul.com/global/eng/pages/offerings/industries/chemica e protective "tubes" in which the specific product is ship peels" may be made from PVC plastic. crochip Technology Incorporated believes the informatio iginal packing materials is true and correct to the best of i curacy of data in this form because it has been compiled lotected from disclosure as trade secrets and some inform a average weight of these parts and the average weight of sterials contained within silicon devices (silicon IC) in the crochip Technology Incorporated does not provide any w ovided by Microchip Technology Incorporated and its sut der acknowledgement, and invoices. crochip disclaims any duty to notify users of updates or o fifered by users or third parties as a result of the users' rel smpliance for semiconductor products.	0.0079 g To 0.0079 g To omply with EU Directive 2002/95/ via internal design controls, supp emical substance is NOT an inter coument, there is no credible rease / scheme world-wide. ammability standard for plastics (s/plastics/ bed are made from polyvinyl chlor is this form concerning substat is knowledge and belief, as of the based on the ranges provided in 1 ation may not have been provide anticipated significant toxic met- finished parts. arranty, express or implied, with isidiaries are contained in Microc changes to Material Content Decl iance on the information in Material	Tot tal Mass EC (RoHS Directive), EU Directive 2011/65/EU olier declarations, and /or analytical test data. Attional ingredient in the semiconductor device son to believe that the unavoidable impurity of a vou can access the UL iQTM family of datab bride (PVC) plastic. "Window envelopes" used neces restricted by RoHS in Microchip Technolo Waterial Safety Data Sheets provided by raw ra d by subcontract assemblers and raw materia als components. These estimates do not inclut respect to the information provided in this da hip's standard terms and conditions of sale. arations and shall not be liable for any damag ial Content Declarations (MCD) or independe	ALS: 100.000 (RoHS Recast Directive) e and, to the best of Micro oncentration of the chem ases to obtain a test repo I to hold the packing slip ogy Incorporated's semit gy Incorporated cannot g taterial suppliers. Suppli I suppliers. Information i de trace levels of dopant claration. The exclusive, These are provided in Mic es, direct or indirect, con nt third party test reports	7.900 and with EU C pochip Technol ical substance rt at on the outer b conductor dev arantee the c er information s provided on s, metals, and limited produ rochip's quot sequential or - (SGS) or of th	1,000,000 Directive ogy e, if any, is not box and certain vices in their completeness and is often ly as estimates of non-metal ct warranties ations, sales otherwise, his Certificate of	0.58	Total (mg) Doped Silicon (mg) Total Doped Gold (mg) Total Nickel Palladium Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0 7440-05-03 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight 95.73 3.23 1.04	0.75
is semiconductor device and its homogenous materials of 02/53/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 ch corporated's knowledge and belief as of the date of this dd low the threshold of regulatory concern for any regulatory obling 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 peles" may be made from PVC plastic. crochip Technology Incorporated believes the informatio ginal packing materials is true and correct to the best of i tetrals contained within silicon devices (silicon IC) in the crochip Technology Incorporated does not provide any w ovided by Microchip Technology Incorporated does not provide any w ovided by Microchip Technology Incorporated does not provide any w ovided by Microchip Technology Incorporated does not provide any w ovided by Microchip Technology Incorporated does not provide any w ovided by users or third parties as a result of the users' rel impliance for semiconductor products.	0.0079 g To 0.0079 g To omply with EU Directive 2002/95/ via internal design controls, supp emical substance is NOT an inter scheme world-wide. ammability standard for plastics (s/plastics/ bed are made from polyvinyl chlor in this form concerning substant ts knowledge and belief, as of the nin this form concerning substant ts knowledge and belief, as of the assed on the ranges provided in a ation may not have been provide anticipated significant toxic met finished parts. arranty, express or implied, with sidiaries are contained in Microco- changes to Material Content Decl iance on the information in Materiant	Tot tal Mass EC (RoHS Directive), EU Directive 2011/65/EU plier declarations, and /or analytical test data. Ational ingredient in the semiconductor devic son to believe that the unavoidable impurity of . You can access the UL iQTM family of datab oride (PVC) plastic. "Window envelopes" used Material Safety Data Sheets provided by raw r d by subcontract assemblers and raw materia als components. These estimates do not inclu respect to the information provided in this de hip's standard terms and conditions of sale." arations and shall not be liable for any damag ial Content Declarations (MCD) or independe	ALS: 100.000 (RoHS Recast Directive) e and, to the best of Micro oncentration of the chem ases to obtain a test repo I to hold the packing slip ogy Incorporated cannot g naterial suppliers. Suppli I suppliers. Information i de trace levels of dopant claration. The exclusive, rhese are provided in Mic es, direct or indirect, con nt third party test reports	7.900 and with EU D pochip Technol ical substance rt at on the outer b conductor dev uarantee the c ri information s provided on s, metals, and limited produ rochip's quot sequential or (SGS) or of th	1,000,000 Directive ogy e, if any, is not box and certain rices in their completeness and is often ly as estimates of non-metal ct warranties ations, sales otherwise, his Certificate of	0.58	Total (mg) Doped Silicon (mg) Total (mg) Total (mg) Total Nickel Palladium Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) 7440-02-0 7440-05-03 7440-57-5	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight 95.73 3.23 1.04	0.75

	уре: PH 144 (Lea	a) LQFP 20x20x1.4mm (H8)	Termin Co	nation Base / pper Alloy (C	on Base Alloy: Package Homogeneous Mate r Alloy (Cu) 8.1 Electronics (e.g. pc boards, d			ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			420.61	(mg) Total	Mold Compound	% of Total Weight	69.22
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	439.61	(mg) i otai	Mola Compouna	% of Total weight	68.23
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.996	373.665	579,955	EME-G700L	Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.936	38.246	59,360		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.094	26.376	40,938		Phenolic Resin	I rade Secret	6.00	
Carbon Black	7440 50 9	I and Frame	0.205	1.319	2,047		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	26.955	173.669	269,547	170.00	() =	I otal	100.00	07.07
	7440-31-5	Lead Flame	0.069	0.446	692	178.28	(mg) I otal	Lead Frame	% of I otal Weight	27.67
Silver	7440-22-4	Lead Frame	0.527	3 306	5 271	EFTEC 641	Connor	7440.50.9	07.42	
Zinc	7440-22-4	Lead Frame	0.527	0.321	498	+ Ag	Tin	7440-30-8	97.42	
Chromium	7440-47-3	Lead Frame	0.069	0.446	692		Silver	7440-22-4	1 91	
Silver	7440-22-4	Die Attach	0.357	2,300	3.570		Zinc	7440-66-6	0.18	
Epoxy resin	Trade Secret	Die Attach	0.102	0.657	1.020		Chromium	7440-47-3	0.25	
Aliphatic acid anbydride / TPLI-ALET	Trade Secret	Die Attach	0.051	0.329	510		onionidii	Total	100.00	l
Silicon	7440-21-3	Chip (Die)	2 090	13 466	20,900	3 29	(ma) Total	Die Attach	% of Total Weight	0.51
Gold	7440-57-5	Wire Bond	0.280	1 804	2 800	2220	(ing) rotal	7440-22-4	70	0.01
Tin	7440-31-5	Plating on external leads (nine) - Matte Tin / annealed at 150°C for 1 hour	1 220	7.860	12,000	3230	Enoxy resin	Trade Secret	20	
101	7440-31-3	TOTALS:	100.000	644.300	1 000 000	Aliphatic a	cid anhydride / TPU-ALET	Trade Secret	10	
	0.6442	r Total Mass		0111000	1,000,000	/ upriatio a		Total	100.00	
his semiconductor device and its homogenous materials c irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). ompliance with the above EU Directives has been verified v	omply with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	I (RoHS Recast	Directive) an	d with EU	13.47	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	2.09
his semiconductor device and its homogenous materials c 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 ch echnology Incorporated's knowledge and belief as of the da remical substance, if any, is not below the threshold of reg	omply with EU Directive via internal design con emical substance is N ate of this document, t ulatory concern for an	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	I (RoHS Recast ce and, to the b le impurity col	Directive) an est of Microch ncentration of	d with EU hip the	13.47	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	2.09
his semiconductor device and its homogenous materials c 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 ch echnology Incorporated's knowledge and belief as of the d nemical substance, if any, is not below the threshold of reg olding compounds used by Microchip meet the UL94 V0 fla tp://ul.com/global/eng/pages/offerings/industries/chemical	omply with EU Directi via internal design con emical substance is N ate of this document, julatory concern for an ammability standard fo Is/plastics/	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databa	RoHS Recast e and, to the b le impurity con ases to obtain a	Directive) and est of Microch acentration of a test report a	d with EU hip the t	13.47	Total (mg) Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	0.28
his semiconductor device and its homogenous materials of irrective 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 ch echnology Incorporated's knowledge and belief as of the d hemical substance, if any, is not below the threshold of reg olding compounds used by Microchip meet the UL94 V0 fla tp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is shipp ox and certain "reels" may be made from PVC plastic.	omply with EU Directive via internal design con emical substance is Ne ate of this document, t julatory concern for an ammability standard fo ls/plastics/ ped are made from pol	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidat y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databa yvinyl chloride (PVC) plastic. "Window envelopes" used	I (RoHS Recast e and, to the b le impurity con ases to obtain a d to hold the pa	Directive) an est of Microch ncentration of a test report a ncking slip on	d with EU hip the t the outer	13.47	Total (mg) 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	0.28
his semiconductor device and its homogenous materials c irrective 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 ch echnology Incorporated's knowledge and belief as of the d hemical substance, if any, is not below the threshold of reç 'olding compounds used by Microchip meet the UL94 V0 fli ttp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is ship ox and certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatior avices in their original packing materials is true and correc uarantee the completeness and accuracy of data in this for aterial suppliers. Information is provided only as estim nese estimates do not include trace levels of dopants, meta	omply with EU Directivitia internal design con emical substance is Nate of this document, t julatory concern for an ammability standard for ls/plastics/ oped are made from pol on in this form concernit to to the best of its kno m because it has been rom disclosure as trad nates of the average w alls, and non-metal mai	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidate y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databe yvinyl chloride (PVC) plastic. "Window envelopes" used ng substances restricted by RoHS in Microchip Techno wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been pro eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in th	I (RoHS Recast e and, to the b le impurity col ases to obtain a d to hold the pa logy Incorporar ochip Technol ety Data Sheet vided by subct te d significant te finished parts	Directive) an est of Microch a test report a a test report a a test semicor ogy Incorpora s provided by ntract assem oxic metals co a.	d with EU ip the t the outer ductor ated cannot raw blers and omponents.	13.47	Total (mg) Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.28
his semiconductor device and its homogenous materials c irrective 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 ch echnology Incorporated's knowledge and belief as of the d hemical substance, if any, is not below the threshold of reç lolding compounds used by Microchip meet the UL94 V0 fli ttp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is shipl ox and certain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the informatior avices in their original packing materials is true and correc uarantee the completeness and accuracy of data in this for iterial suppliers. Supplier information is often protected ff we material suppliers. Information is provided only as estim hese estimates do not include trace levels of dopants, metri icrochip Technology Incorporated does not provide any we 'oduct warranties provided by Microchip Technology Incor Microchip's quotations, sales order acknowledgement, an	omply with EU Directivia internal design con emical substance is Nate of this document, t julatory concern for an ammability standard for s/plastics/ bed are made from pol n in this form concerni it to the best of its kno m because it has been rom disclosure as trad nates of the average w als, and non-metal mat arranty, express or imp porated and its subsid d invoices.	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databi- yvinyl chloride (PVC) plastic. "Window envelopes" used ing substances restricted by RoHS in Microchip Techno wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been pro eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the bolied, with respect to the information provided in this de iaries are contained in Microchip's standard terms and	e and, to the b le impurity con ases to obtain a to hold the pa logy Incorporat rochip Technol ety Data Sheett vided by subcc ed significant to e finished parts ecclaration. The conditions of s	Directive) an est of Microch acentration of a test report a acking slip on ted's semicor ogy Incorpora s provided by ontract assem oxic metals co accented by ontract assem accented by ontract assem accented by ontract assem accented by ontract assem accented by ontract assem ontract assemble ontract assem	d with EU hip the t the outer adductor ated cannot raw blers and omponents. hited e provided	13.47	Total (mg) 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) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.28
his semiconductor device and its homogenous materials c irrective 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 ch echnology Incorporated's knowledge and belief as of the d hemical substance, if any, is not below the threshold of reg lolding compounds used by Microchip meet the UL94 V0 fi ttp://ul.com/global/eng/pages/offerings/industries/chemica he protective "tubes" in which the specific product is ship ox and certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the informatior evices in their original packing materials is true and correc uarantee the completeness and accuracy of data in this for vaterial suppliers. Information is provided only as estin hese estimates do not include trace levels of dopants, met icrochip Technology Incorporated does not provide any we roduct warranties provided by Microchip Technology Incor Microchip's quotations, sales order acknowledgement, an icrochip disclaims any duty to notify users of updates or c herwise, suffered by users or third parties as a result of th iGS) or of this Certificate of Compliance for semiconducto	omply with EU Directi- via internal design con emical substance is N- ate of this document, t julatory concern for an ammability standard for ls/plastics/ bed are made from pol n in this form concerni t to the best of its kno m because it has been om disclosure as trad nates of the average w als, and non-metal mar arranty, express or imp porated and its subsid d invoices. hanges to Material Cor e users' reliance on the products.	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidat y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databa- yovinyl chloride (PVC) plastic. "Window envelopes" used ng substances restricted by RoHS in Microchip Techno wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been pro eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the blied, with respect to the information provided in this d iaries are contained in Microchip's standard terms and thent Declarations and shall not be liable for any damag e information in Material Content Declarations (MCD) or	e and, to the b le impurity cor ases to obtain a d to hold the pa logy Incorpora ochip Technol ety Data Sheet vided by subcc ad significant to e finished parts aclaration. The conditions of s es, direct or in independent to	Directive) an est of Microch acentration of a test report a acking slip on ted's semicor ogy incorport s provided by provided by provided by srovided semicor ogy incorport s provided semicor ogy inc	d with EU hip the t the outer adductor ated cannot raw blers and omponents. hited e provided quential or reports	13.47	Total (mg) Doped Silicon (mg) Total (mg) Total (mg) Total Tin	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 7440-31-5	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	2.09

Semiconductor Device Type: PQ 44 (Lead) MQFP (10x10x2mm) (T8)			Termiı Co	nation Base A pper Alloy (C	Alloy: u)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Devic	e Type: PQ 44 (Lead) IV		0/ T = (= l							63
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	314.89	(mg) Total	Mold Compound	% ot Total Weight	64.87
Silica, vitreous (or fused)	60676-86-0	Mold Compound	55.140	267.653	551,395	EME- G700	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	C7025	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		L	Total	100.00	1
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	3230	Silver (Ag)	7440-22-4	83	0.0.
Tin	7440-31-5	Plating on external leads (nins) - Matte Tin / annealed at 150°C for 1 bour	1 820	8 834	18 200		ANHYDRIDE	Trade Secret	9	
101	1110 01 0	TOTALS:	100.000	485.410	1.000.000		EPOXY RESIN	Trade Secret	8	
	0 4854	a Total Mass			.,,		EI OXT REOM	Total	100.00	
his semiconductor device and its homogenous material	s comply with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (R	oHS Recast Dir	ective) and wi	th EU	40.07	Tetal (mm)		% of Total Wainht	2.07
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).					19.27	i otai (mg)	Chip (Die)	% of Total weight	3.97
Compliance with the above EU Directives has been verified	ed via internal design contro	ols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
f a chemical substance is absent from the list above, the ncorporated's knowledge and belief as of the date of this any, is not below the threshold of regulatory concern for	chemical substance is NOT document, there is no crec any regulatory scheme wor	^r an intentional ingredient in the semiconductor device a lible reason to believe that the unavoidable impurity con- ld-wide.	nd, to the best centration of th	of Microchip 1 e chemical su	Fechnology Ibstance, if			Total	100.00	
Nolding compounds used by Microchip meet the UL94 VC http://ul.com/global/eng/pages/offerings/industries/chem) flammability standard for icals/plastics/	plastics. You can access the UL iQTM family of databases	s to obtain a te	st report at		1.02	(mg) Total	Wire Bond	% of Total Weight	0.21
he protective "tubes" in which the specific product is shand certain "reels" may be made from PVC plastic.	ipped are made from polyv	inyl chloride (PVC) plastic. "Window envelopes" used to	hold the packi	ng slip on the	outer box		Doped Gold	7440-57-5	100	
flicrochip Technology Incorporated believes the informat n their original packing materials is true and correct to th he completeness and accuracy of data in this form becat Jupplier information is often protected from disclosure a nformation is provided only as estimates of the average nclude trace levels of dopants, metals, and non-metal ma	ion in this form concerning ne best of its knowledge am use it has been compiled ba s trade secrets and some ir weight of these parts and th aterials contained within sil	I substances restricted by RoHS in Microchip Technology d belief, as of the date listed in this form. Microchip Tech used on the ranges provided in Material Safety Data Sheet formation may not have been provided by subcontract a le average weight of anticipated significant toxic metals of icon devices (silicon IC) in the finished parts.	y Incorporated nology Incorpo s provided by ssemblers and components. T	s semiconduo orated cannot raw material s raw material hese estimate	ctor devices guarantee suppliers. suppliers. s do not			Total	100.00	
Wicrochip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporate Microchip's quotations, sales order acknowledgement, ar	varranty, express or impli ed and its subsidiaries are o d invoices.	ed, with respect to the information provided in this decla contained in Microchip's standard terms and conditions o	ration. The exc of sale. These a	lusive, limited are provided in	l product 1	8.83	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for	%of Total Weight	1.82
Microchip disclaims any duty to notify users of updates o otherwise, suffered by users or third parties as a result of or of this Certificate of Compliance for semiconductor pro	r changes to Material Conte the users' reliance on the i oducts.	ent Declarations and shall not be liable for any damages, information in Material Content Declarations (MCD) or inc	direct or indire lependent thirc	ct, consequer party test rep	ntial or ports (SGS)		Tin	7440-31-5	100.00	
						1		Total	100.00	
							-			

	• MS and IIA	8 (I pad) MSOP aram (43)	Termir Co	nation Base A oper Alloy (C	Alloy: :u)		Package Homog 8.1 Electronics (e.g	geneous Materials: J. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Type			0/ Tatal	1						
Desite Outletenese	0.00 No. 10	"Contained in"	% I otal			20.43	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm				00.04	1
Silica, vitreous	60676-86-0	Mold Compound	69.354	17.755	693,542	SG-8300GM	Silica, vitreous	60676-86-0	86.91	
Epoxy Resin	Trade Secret	Mold Compound	6.121	1.567	61,207		Epoxy Resin	Irade Secret	7.67	
Phenolic Resin	Trade Secret	Mold Compound	4.078	1.044	40,778		Phenolic Resin	I rade 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	100.00	
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	CDA194+Ag	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	8390A	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	Dig	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	0.320	12,500		Modified Amine	827-43-0	4	
		TOTALS:	100.000	25.600	1,000,000			Total	100.00	-
	0 0256	α Total Mass				1 92	Total (mg)	Chin (Die)	% of Total Weight	7.5
This semiconductor device and its homogenous materials com	oly with EU Directiv	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU		Doped Silicon	7440-21-3	100	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).								Total	100.00	
Compliance with the above EU Directives has been verified via in	nternal design com	rois, supplier declarations, and for analytical test data.								
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regulat	cal substance is NO of this document, the ory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide.	and, to the be e impurity cor	est of Microch centration of	the	0.05	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	nability standard fo lastics/	r plastics. You can access the UL iQTM family of databas	ses to obtain a	test report a	t		Copper	7440-50-8	98	
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Palladium	7440-05-3	2	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concernin the best of its know ecause it has been disclosure as trade s of the average we and non-metal mat	g substances restricted by RoHS in Microchip Technolo vledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov ight of these parts and the average weight of anticipatec erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ty Data Sheets ided by subco I significant to finished parts	ed's semicon ogy Incorpora provided by ntract assem xic metals co	eductor ated cannot raw blers and omponents.			Total	100.00	-
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid voices.	lied, with respect to the information provided in this dec aries are contained in Microchip's standard terms and c	claration. The onditions of s	exclusive, lim ale. These are	iited e provided	0.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chan otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Con ers' reliance on the oducts.	tent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	s, direct or ind ndependent th	lirect, consec hird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	
						25.600				100.000

Semiconductor Device Type: UN 10 (Lead) MSOP 3x3mm (E3 / EL) Contained In "Contained In"			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
	. OIT IO (Lead)	"Contained In"	% Total	1	1			1		
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	nnm	6.66	(mg) Total	Mold Compound	% ot Total Weight	28.71
Silica vitroous	60676-86-0	Mold Compound	24.404	5.662	244.035	EME-G600	Silica vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony triovide)	Trade Secret	Mold Compound	1 758	0.408	17 585		Enoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL ShO3, No diantimony triovide)	Trade Secret	Mold Compound	1.758	0.408	17,585		Phenolic Resin	Trade Secret	6.13	
Epoxy Cresol Novolac	20600-82-2	Mold Compound	0.703	0.400	7.034		Enoxy, Cresol Novolac	20600-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.705	0.020	861		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	42,830	0.020	428 200		Oarborr Diack	Total	100.00	U
Niekel	7440-50-8	Lead Frame	42.030	9.937	420,299	10.10	() = ()	Total	100.00	11.07
Nickei	7440-02-0	Lead Frame	1.142	0.265	7.505	10.43	(mg) I otal	Lead Frame	% of 1 otal Weight	44.97
Silver	7440-22-4	Lead Frame	0.751	0.174	7,505	C7025	Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.202	0.047	2,024		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.045	0.010	450		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.601	0.139	6,006		Silicon	7440-21-3	0.45	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.139	0.032	1,386		Magnesium	7439-95-4	0.10	
Treated silica	Trade Secret	Die Attach	0.015	0.004	154			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.015	0.004	154	0.18	(mg) Total	Die Attach	% of Total Weight	0.77
Silicon	7440-21-3	Chip (Die)	2.800	0.650	28,000	8200T	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.680	0.158	6.800		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	22.070	5.120	220,700		Treated silica	Trade Secret	2	
		TOTALS:	100.000	23.200	1.000.000	Hete	rocyclic organic compound	Trade Secret	2	
	0 0222	a Total Mass			,,			Total	100.00	9
Directive 2002/33/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via in If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date o	ternal design con al substance is No f this document, t	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab	e and, to the b le impurity co	est of Microch	nip the		Doped Silicon	7440-21-3 Total	100 100.00	
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/pla	ory concern for an ability standard fo astics/	y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa	ases to obtain	a test report a	t	0.16	(mg) Total	Wire Bond	% of Total Weight	0.68
box and certain "reels" in which the specific product is shipped a	re made from por	yvinyi chloride (PVC) plastic. "Window envelopes" used	i to noid the pa	icking slip on	the outer		Doped Gold	7440-57-5	100	
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 material suppliers. Supplier information is often protected from or raw material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metals, a	his form concernin he best of its know cause it has been disclosure as trade s of the average we nd non-metal mat	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe secrets and some information may not have been pro sight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ety Data Sheet vided by subce ed significant t e finished part	ted's semicor ogy Incorpora s provided by ontract assem oxic metals co s.	iductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and inv	ty, express or imp ted and its subsid roices.	plied, with respect to the information provided in this de laries are contained in Microchip's standard terms and o	claration. The conditions of s	exclusive, lim sale. These ar	iited e provided	5.12	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	22.07
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor pro	es to Material Cor ers' reliance on the ducts.	tent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or in independent t	direct, consec hird party test	quential or reports		Tin	7440-31-5	100.00	
								Total	100.00	-
						22 200				400.000

	Pond PA 8	Logal PDIP (Small Outling - 200") (C4 / CK)	Termir Coj	nation Base A oper Alloy (C	Alloy: u)		Package Homo 8.1 Electronics (e.	geneous Materials: g. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total	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	GE800	Fused Silica	60676-86-0	72.00	1
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	Mola Compound	0.399	1.942	3,990	-	Carbon Black	1333-86-4	0.50	J
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	CDA194+Ag	Copper	7440-50-8	95.54	
ZIIIC Phosphorous	7723-14-0	Lead Frame	0.013	0.064	87		Silvor	7439-89-6	2.30	
Silver	7440-22-4	Die Attach	0.550	2.678	5 502	1	Zinc	7440-22-4	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.000	0.535	1 100		Phosphorous	7723-14-0	0.08	
Diluent	3101-60-8	Die Attach	0.055	0.268	550		Theopholodo	Total	100.00	9
Phenolic hardener	Trade secret	Die Attach	0.000	0.200	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	CRM-1064I	(ing) rotai Silver	7440-22-4	73.36	0.75
Dicvandiamide	461-58-5	Die Attach	0.002	0.009	18	ORM-T004E	Enoxy Resir	9003-36-5	14.67	
Silicon	7440-21-3	Chip (Die)	7.500	36.503	75.000	1	Diluen	3101-60-8	7.33	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.956	1.965	1	Phenolic hardene	Trade secret	2.93	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.017	35		Amine type hardene	r 827-43-0	1.47	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500	1	Dicyandiamide	461-58-5	0.24	
		TOTALS:	100.000	486.700	1,000,000	1		Total	100.00	9
	0.4867	g Total Mass				36.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
This semiconductor device and its homogenous materials compl Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	y with EU Direction	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU		Doped Silicon	7440-21-3 Total	100 100.00	
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulato	al substance is N this document, t ry concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidabl by regulatory scheme world-wide.	e and, to the be e impurity con	est of Microch centration of	ip the	0.97	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard fo stics/	or plastics. You can access the UL iQTM family of databa	ses to obtain a	test report at	t		Copper	7440-50-8	98	
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	re made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Palladium	7440-05-3	2	
							<u></u>	Total	100.00	4
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 material suppliers. Supplier information is often protected from of raw material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metals, a	his form concerni the best of its kno cause it has been lisclosure as trad of the average w nd non-metal ma	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technolo ty Data Sheets ided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by ntract assemi oxic metals co	ductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorporat in Microchip's quotations, sales order acknowledgement, and inv	ty, express or imp ed and its subsid oices.	plied, with respect to the information provided in this dec liaries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	6.08	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor proc	es to Material Cor rs' reliance on th lucts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	s, direct or inc ndependent th	lirect, conseq hird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	
						486.700)			100.000

MICROCHIP Semiconductor Device Ty	pe: Pand PE 14 (I	.ead) PDIP (Small Outline300") (D2 / DF)	Termi Co	nation Base A oper Alloy (C	Alloy: u)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total							== .
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	760.73	(mg) Total	Mold Compound	% of Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	547.728	574,560	EME-GE800	Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	83.681	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	53.251	55,860	_	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	Mola 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	100.00	
liton	7439-89-6	Lead Frame	0.247	2.352	2,468	100.10	(mg) Total	Lead Frame	% of Total Weight	10.5
Zine	7440-22-4	Lead Frame	0.200	1.907	2,000	194+AG	Copper	7440-50-8	95.54	
ZINC	7440-66-6	Lead Frame	0.013	0.125	131	-	liron	7439-89-6	2.35	
Phospholous	7723-14-0	Leau Flame	0.009	0.063	6/	-	Silver	7440-22-4	1.91	
Diostor Regin	7440-22-4	Die Attach	0.503	5.362	3,023	-	Zinc	7440-00-0	0.13	
Eurotianalized Litethana Deain	70000 00 4	Die Attach	0.113	0.257	1,120	-	Filospiloious	1123-14-0 T-4-1	0.00	1
Functionalized Orethane Resin	72009-00-4	Die Attach	0.036	0.357	3/5	7.45	(i otai Dia Amark	100.00	0.75
Epoxy Resin	9003-30-3 12561 08 5	Die Attach	0.019	0.179	100	7.15	(mg) i otai	Die Attach	% of Total Weight	0.75
Epoxy Resin	7440 21 2	Chip (Dio)	7.500	71 409	75.000	2200D	Dioctor Rosin	7440-22-4	15	
Gold	7440-21-3	Wire Bond	0.200	1 007	2,000	Fund	tionalized Urothana Resin	70960 96 4	15	
Tin	7440-37-5	Wille Bollo Blating on external loads (pice) Matte Tip (appealed at 150%C for 1 hour	1 250	11.907	2,000	i une	Enovy Resin	72009-00-4	3	
	7440-31-3	TOTAL S:	100 000	953 300	1 000 000		Epoxy Resin	13561-08-5	3	
	0.0522	r Total Mass	100.000	300.000	1,000,000		Epoxy Realin	Total	100.00	, l
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified vii If a chemical substance is absent from the list above, the cher Technology Incorporated's knowledge and belief as of the dat chemical substance, if any, is not below the threshold of regu	a internal design con nical substance is N e of this document, t latory concern for an	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the b le impurity coi	est of Microch acentration of	iip the	71.50	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	7.5
Molding compounds used by Microchip meet the UL94 V0 flar http://ul.com/global/eng/pages/offerings/industries/chemicals	nmability standard fo /plastics/	r plastics. You can access the UL iQTM family of databa	ses to obtain a	i test report at	t	1.91	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shippe box and certain "reels" may be made from PVC plastic.	ed are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this form material suppliers. Supplier information is often protected fro raw material suppliers. Information is provided only as estima These estimates do not include trace levels of dopants, metal	n this form concerni to the best of its kno because it has been m disclosure as trad ates of the average w s, and non-metal ma	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ety Data Sheets vided by subco d significant to e finished parts	ed's semicon ogy Incorpora provided by ntract assemi oxic metals co	ductor ated cannot raw blers and omponents.		<u>.</u>	Total	100.00	,
Microchip Technology Incorporated does not provide any war product warranties provided by Microchip Technology Incorp in Microchip's quotations, sales order acknowledgement, and	ranty, express or imp orated and its subsid invoices.	blied, with respect to the information provided in this de iaries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These are	iited e provided	11.92	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or ch- otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	anges to Material Cor users' reliance on th products.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or in independent t	direct, conseq hird party test	uential or reports		Tin	7440-31-5	100.00	
						1 '		Total	100.00	,
						052 200				100.000

Semiconductor Device Type: P and PE 16 (Lead) PDIP (Small Outline300") (D6 / DU) "Contained In"				nation Base A pper Alloy (Cu	lloy: ı)		Package Hom 8.1 Electronics (e	ogeneous Materials: a.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Desis Orthofener	CAC Number	"Contained In"	% Total Weight			748.83	(mg) Total	Mold Compound	% ot Total Weight	67.3
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm		Cilian vitan ava	00070.00.0	-	
Silica, vitreous	60676-86-0	Mold Compound	57.205	636.503	572,050	EME-G600	Silica, vitreous	50575-85-0	85.00	
Phonolic Regin (No Br / CL ShO2, No diantimony triovide)	Trade Secret	Mold Compound	4.122	45.000	41,221		Phonolic Rosin	Trade Secret	6.13	
Epoxy Cresol Novolac	20600-82-2	Mold Compound	4.122	43.000	16 / 80		Enory Cresol Novolac	20600-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.202	2 246	2 019		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Erame	29.426	327 409	294 256	1 '		Total	100.00	
Iron	7439-89-6	Lead Frame	0.724	8 054	7 238	342 70	(mg) Total	Load Eramo	% of Total Woight	20.9
Silver	740-22-4	Lead Frame	0.587	6.528	5 867	342.70	(ilig) Totai	7440-50-9		30.0
Zinc	7440-22-4	Lead Frame	0.030	0.328	385	194+AG	lrop	7440-50-6	95.54	
Phosphorous	7723-14-0	Lead Frame	0.025	0.420	254		Silver	7439-89-0	1.01	
Silver	7440-22-4	Die Attach	0.023	0.205	518		Zinc	7440-22-4	0.13	
Epoxy resin	Trade Secret	Die Attach	0.016	0.179	161		Phosphorous	7723-14-0	0.08	
Gamma-butvrolactone	96-48-0	Die Attach	0.002	0.023	21		Theopholodo	Total	100.00	
Silicon	7440-21-3	Chip (Die)	0.150	1.669	1 500	0.79	(mg) Total	Die Attech	% of Total Weight	0.07
Cold	7440 57 5	Wire Bond	0.040	0.445	400	0.70	(ing) Totai	7440.00 A		0.07
Tin	7440-57-5	Disting on external loads (size) Matter Tip (appealed at 450%C for 4 hour	1.640	10.445	16 400	03013	Silver Enony rosin	Trada Searct	74	
111	7440-31-3	Plaung on external leads (pins) - Matter Tin/ annealed at 150 C for Thour TOTALS:	100 000	1 112 670	1 000 000		Gamma-butvrolactone	96-48-0	3	
	4 4 4 9 7	r Total Mass	1001000	.,	.,,		Canina Batyrolacione	Total	100.00	
	1.112/							10(4)	100.00	
semiconductor device and its homogenous materials comply /53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH	S Recast Direct	ive) and with E	U Directive	1.67	Total (mg)	Chip (Die)	% of Total Weight	0.15
semiconductor device and its homogenous materials compl /53/EC (End-of-Life Vehicles (ELV) Directive). upliance with the above EU Directives has been verified via int shemical substance is absent from the list above, the chemica rporated's knowledge and belief as of the date of this docume	y with EU Directive 2 ternal design control Il substance is NOT a ent, there is no credii	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer	S Recast Direct to the best of M tration of the c	ive) and with E Alcrochip Tech hemical substa	EU Directive nology ance, if any,	1.67	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	0.15
semiconductor device and its homogenous materials comply /53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via int shemical substance is absent from the list above, the chemica rporated's knowledge and belief as of the date of this docume to below the threshold of regulatory concern for any regulator. fing compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plas	y with EU Directive 2 ternal design control I substance is NOT a substance is no credil y scheme world-wid ability standard for p stics/	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer e. lastics. You can access the UL iQTM family of databases t	S Recast Direct , to the best of M ntration of the c o obtain a test r	ive) and with E Aicrochip Tech hemical substa report at	EU Directive nology ance, if any,	0.45	Total (mg) Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	0.15
s semiconductor device and its homogenous materials comply 2/53/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 chemical rporated's knowledge and belief as of the date of this docume at below the threshold of regulatory concern for any 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 in "reels" may be made from PVC plastic.	with EU Directive 2 ternal design control Il substance is NOT a Int, there is no credit y scheme world-wid ability standard for p stics/ e made from polyvin	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, le reason to believe that the unavoidable impurity concer e. lastics. You can access the UL iQTM family of databases t hyl chloride (PVC) plastic. "Window envelopes" used to ho	S Recast Direct , to the best of N ntration of the c o obtain a test r old the packing	ive) and with E Aicrochip Tech hemical substa eport at slip on the out	U Directive nology ance, if any, eer box and	0.45	Total (mg) 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	0.15
s semiconductor device and its homogenous materials comple 2/53/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 rporated's knowledge and belief as of the date of this docume ot below the threshold of regulatory concern for any regulator ding compounds used by Microchip meet the UL94 V0 flamma ://ul.com/global/eng/pages/offerings/industries/chemicals/plat protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in th original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is of then protected from disclosure as trade secrets an ided only as estimates of the average weight of these parts ar spants, metals, and non-metal materials contained within silic	with EU Directive 2 ternal design control al substance is NOT / ent, there is no credil y scheme world-wid ability standard for p stics/ e made from polyvin his form concerning s knowledge and be en compiled based o d some information nd the average weigh con devices (silicon	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer e. lastics. You can access the UL iQTM family of databases t hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology I ief, as of the date listed in this form. Microchip Technology I n the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a tt of anticipated significant toxic metals components. The IC) in the finished parts.	S Recast Direct to the best of M tration of the c o obtain a test r old the packing ncorporated's s yy Incorporated ided by raw ma nd raw material se estimates do	ive) and with E Aicrochip Tech hemical substa eport at slip on the out emiconductor cannot guarar terial suppliers. Inf not include tr	U Directive inology ance, if any, er box and devices in itee the s. Supplier ormation is ace levels	0.45	Total (mg) Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.15
semiconductor device and its homogenous materials comply 2/53/EC (End-of-Life Vehicles (ELV) Directive). npliance with the above EU Directives has been verified via into chemical substance is absent from the list above, the chemical rporated's knowledge and belief as of the date of this docume to below the threshold of regulatory concern for any 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 ain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in the ordinal packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has beer mation is often protected from disclosure as trade secrets and vided only as estimates of the average weight of these parts ar spants, metals, and non-metal materials contained within silic ochip Technology Incorporated does not provide any warrant anties provided by Microchip Technology Incorporated and it attions, sales order acknowledgement, and invoices.	v with EU Directive 2 ternal design control al substance is NOT a ent, there is no credil ability standard for p stics/ we made from polyvin is form concerning s knowledge and be en compiled based d d some information and the average weigh con devices (silicon ty, express or implie is subsidiaries are co	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer e. lastics. You can access the UL iQTM family of databases t by chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology II ief, as of the date listed in this form. Microchip Technology II ief, as of the date listed in this form. Microchip Technology II i the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a it of anticipated significant toxic metals components. The (C) in the finished parts. d, with respect to the information provided in this declarat intained in Microchip's standard terms and conditions of s	S Recast Direct to the best of M tration of the c o obtain a test r old the packing ncorporated's s y Incorporated ided by raw ma the factor of the second ided by raw material se estimates do tion. The exclus sale. These are	ive) and with E flicrochip Tech hemical substa report at slip on the out emiconductor cannot guarar emiconductor cannot guarar suppliers. Infr not include tr ive, limited pro provided in Mi	U Directive inology ance, if any, er box and devices in tee the s. Suppler ormation is ace levels bduct crochip's	0.45	Total (mg) 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) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.15
semiconductor device and its homogenous materials comple 2/53/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 chemica rporated's knowledge and belief as of the date of this docume ot below the threshold of regulatory concern for any regulator ding compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plar protective "tubes" in which the specific product is shipped ar ain "reels" may be made from PVC plastic. orchip Technology Incorporated believes the information in the orginal packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be rmation is often protected from disclosure as trade secrets an ided only as estimates of the average weight of these parts ar opants, metals, and non-metal materials contained within silic ochip Technology Incorporated does not provide any warrant artites provided by Microchip Technology Incorporated and it ations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or change rwise, suffered by users or third parties as a result of the user is Certificate of Compliance for semiconductor products.	v with EU Directive 2 ternal design control al substance is NOT a ent, there is no credit y scheme world-wid ability standard for p stics/ e made from polyvit his form concerning s knowledge and be en compiled based o some information nd the average weigh con devices (silicon ty, express or implie is subsidiaries are co es to Material Conter is' reliance on the im	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer e. lastics. You can access the UL iQTM family of databases t hyl chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology In the ranges provided in Material Safety Data Sheets prov may not have been provided by subcontract assemblers a tt of anticipated significant toxic metals components. The C) in the finished parts. d, with respect to the information provided in this declarat intained in Microchip's standard terms and conditions of st the Declarations and shall not be liable for any damages, di ormation in Material Content Declarations (MCD) or indep	S Recast Direct to the best of M htration of the c o obtain a test r old the packing ncorporated's s gy Incorporated ided by raw ma se estimates do tion. The exclus sale. These are rect or indirect, yendent third pa	ive) and with E Aicrochip Tech hemical substa eport at slip on the out emiconductor cannot guarar terial suppliers. Inf not include tr ive, limited pro provided in Mi consequential rty test report:	U Directive anology ance, if any, er box and devices in tee the s. Supplier ormation is ace levels boduct crochip's	0.45	Total (mg) Doped Silicon (mg) Total Doped Gold (mg) Total Tin	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 7440-31-5	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	0.15
semiconductor device and its homogenous materials compl /53/EC (End-of-Life Vehicles (ELV) Directive). pliance with the above EU Directives has been verified via in hemical substance is absent from the list above, the chemica rporated's knowledge and belief as of the date of this docume to below the threshold of regulatory concern for any regulator ling compounds used by Microchip meet the UL94 V0 flamma //ul.com/global/eng/pages/offerings/industries/chemicals/plas protective "tubes" in which the specific product is shipped ar in "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in th original packing materials is true and correct to the best of it pleteness and accuracy of data in this form because it has be mation is often protected from disclosure as trade secrets an ided only as estimates of the average weight of these parts ar papants, metals, and non-metal materials contained within silic ochip Technology Incorporated does not provide any warrant anties provided by Microchip Technology Incorporated and it ations, sales order acknowledgement, and invoices. ochip disclaims any duty to notify users of updates or change rwise, suffered by users or third parties as a result of the user is Certificate of Compliance for semiconductor products.	v with EU Directive 2 ternal design control al substance is NOT a nt, there is no credil ability standard for p stics/ are made from polyvin sis form concerning s knowledge and be en compiled based c d some information nd the average weigl son devices (silicon ty, express or implie is subsidiaries are co- es to Material Contel s' reliance on the ini	002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoH s, supplier declarations, and /or analytical test data. In intentional ingredient in the semiconductor device and, ble reason to believe that the unavoidable impurity concer e. lastics. You can access the UL iQTM family of databases t by chloride (PVC) plastic. "Window envelopes" used to ho substances restricted by RoHS in Microchip Technology II ief, as of the date listed in this form. Microchip Technology II ief, as of the date listed in this form. Microchip Technology II ief, as of the date listed in this form. Microchip Technology II ief, as of the date listed in this form. Microchip Technology II ief, as of the date listed in this form. Microchip Technology II of the ranges provided by subcontract assemblers a it of anticipated significant toxic metals components. The (C) in the finished parts. d, with respect to the information provided in this declarat intained in Microchip's standard terms and conditions of i to Declarations and shall not be liable for any damages, di ormation in Material Content Declarations (MCD) or indep	S Recast Direct to the best of M tration of the c o obtain a test r old the packing ncorporated's s yy Incorporated ided by raw ma nd raw material se estimates do tion. The exclus sale. These are p rect or indirect, pendent third pa	ive) and with E Microchip Tech hemical substr eport at slip on the out emiconductor cannot guarar terial suppliers. Inf not include tr is uppliers. Inf not include tr ive, limited pro provided in Mi consequential rty test report:	U Directive inology ance, if any, er box and devices in tee the s. Supplier ormation is ace levels boduct crochip's or s (SGS) or	0.45	Total (mg) Doped Silicon (mg) Total Doped Gold (mg) Total Tin	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 7440-31-5	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00 100.00 100.00	0.15

Semiconductor Device Type:	P 18 (Lead)	PDIP .300" (F3 / FP)	Termir Coj	ation Base A oper Alloy (C	llloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: .g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			995 90	(mg) Total	Mold Compound	% of Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	000.00	(inela competitia	// of rotal froight	
Fused Silica	60676-86-0	Mold Compound	57.456	717.051	574,560	EME-GE800	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	
SiO2	14909 60 7	Mold Compound	5.586	24 909	10,050		SiO2	1/202-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.300	24.090	3 990		Carbon Black	1222.96.4	2.50	
Copper	7440-50-8	Lead Frame	10.031	125 102	100 314	4 4	Calboll Diack	Total	100.00	u
Iron	7430-80-6	Lead Frame	0.247	3 070	2 /68	121.04	(mg) Total	Lood Frama	% of Total Weight	10.5
Silvor	7433-03-0	Lead Frame	0.247	2.406	2,400	101.04	(ilig) Total	2440 F0 9		10.5
Zinc	7440-22-4	Lead Frame	0.200	2.490	2,000	194+AG	Lrop	7440-50-6	95.54	
Phosphorous	7723-14-0	Lead Frame	0.013	0.104	87		Silvor	7439-09-0	2.33	
Silver	7440-22-4	Die Attach	0.554	6,908	5 5 3 5		Zinc	7440-22-4	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.004	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	1 "		Total	100.00	u
Phenolic hardener	92-88-6	Die Attach	0.002	0.000	23	0.26	(ma) Total	Dio Attach	% of Total Woight	0.75
	32 00 0	Die Audon	0.002	0.020	20	3.30	(iiig) i otai	Die Allach	76 OF TOTAL WEIGHT	0.75
Butyl cellosolve acetate	112-07-2	Die Attach	0.006	0.075	60	CRM-1064L	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-E	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	
		TOTALS:	100.000	1,248.000	1,000,000		Butyl cellosolve acetate	112-07-2	1	
	1.2480	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directiv	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	93.60	Total (mg)	Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via inte	rnal design cont	rols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemical Technology Incorporated's knowledge and belief as of the date of t chemical substance, if any, is not below the threshold of regulatory	substance is NC his document, tl / concern for any	OT an intentional ingredient in the semiconductor devic nere is no credible reason to believe that the unavoidab r regulatory scheme world-wide.	e and, to the be le impurity con	est of Microch centration of	ip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flammab http://ul.com/global/eng/pages/offerings/industries/chemicals/plase	ility standard fo tics/	r plastics. You can access the UL iQTM family of databa	ises to obtain a	test report a	t	2.50	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped are box and certain "reels" may be made from PVC plastic.	made from poly	rvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in this	s form concernir	g substances restricted by RoHS in Microchip Technol	ogy Incorporat	ed's semicon	ductor			Total	100.00	
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 dis raw material suppliers. Information is provided only as estimates on These estimates do not include trace levels of dopants, metals, and	e best of its know nuse it has been sclosure as trade f the average we d non-metal mate	/ledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe secrets and some information may not have been prov ight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ochip Technolo ety Data Sheets vided by subco d significant to e finished parts	ogy Incorpora provided by ntract assem xic metals co	ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any warranty product warranties provided by Microchip Technology Incorporate in Microchip's quotations, sales order acknowledgement, and invo	, express or imp d and its subsidi ces.	lied, with respect to the information provided in this de aries are contained in Microchip's standard terms and o	claration. The c conditions of s	exclusive, lim ale. These are	ited e provided	15.60	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or changes otherwise, suffered by users or third parties as a result of the users (SGS) or of this Certificate of Compliance for semiconductor produ	s to Material Con s' reliance on the lcts.	tent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or	es, direct or inc independent th	lirect, consec ird party test	uential or reports		Tin	7440-31-5	100.00	
						"		Total	100.00	- I
						1 248 000				100.000

MICROCHIP Semiconductor Device	Type: P 20 (Lead) F	PDIP .300" (G6/GV)	Termi Co	nation Base A pper Alloy (C	lloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: e.g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			4045.00		Mald Commonweak	0/ -4 T-4-1 M-1-1-4	60.4
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1045.39	(mg) I otal	Mold Compound	% of Total Weight	69.1
Fused Silica	60676-86-0	Mold Compound	49.752	752.683	497,520	EME-GE800	Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	7.601	114.993	76,010		Metal Hydro Oxide	Trade Secret	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	<u> </u>	Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	27.687	418.865	276,868			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	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.036	0.548	362		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.024	0.362	239		Silver	7440-22-4	1.91	
Silver (Ag)	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			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	8390A	Silver (Ag)	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.020	0.303	200		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	1.510	22.844	15,100	D	iglycidylether of bisphenol-	54208-63-8	8	
		TOTALS:	100.000	1,512.870	1,000,000		Modified Amine	827-43-0	4	
	1.5129	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above ELI Directives has been verified	comply with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	4.54	Total (mg)	Chip (Die)	% of Total Weight	0.3
	··	·····, ····, ·····, ······, ·····, ·····, ·····, ·····, ·····, ·····, ·····				1 l				
If a chemical substance is absent from the list above, the c Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of re	hemical substance is No date of this document, t gulatory concern for an	OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the b le impurity co	est of Microch ncentration of	ip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 f http://ul.com/global/eng/pages/offerings/industries/chemic	lammability standard fo als/plastics/	or plastics. You can access the UL iQTM family of databa	ises to obtain a	a test report a	t	0.30	(mg) Total	Wire Bond	% of Total Weight	0.02
The protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic.	oped are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	icking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the informatic devices in their original packing materials is true and corre guarantee the completeness and accuracy of data in this fo	on in this form concerni act to the best of its know orm because it has been	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe	ogy Incorpora ochip Technol ety Data Sheets	ted's semicon ogy Incorpora s provided by	ductor ated cannot raw			Total	100.00	2
material suppliers. Supplier information is often protected raw material suppliers. Information is provided only as esti These estimates do not include trace levels of dopants, me	from disclosure as trad imates of the average we stals, and non-metal mat	e secrets and some information may not have been pro- eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	vided by subco d significant to finished parts	ontract assem oxic metals co s.	blers and mponents.					
Microchip Technology Incorporated does not provide any u product warranties provided by Microchip Technology Inco in Microchip's quotations, sales order acknowledgement, a	warranty, express or imp prporated and its subsid and invoices.	blied, with respect to the information provided in this de liaries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	22.84	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.51
Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of t (SGS) or of this Certificate of Compliance for semiconductor	changes to Material Cor he users' reliance on the or products.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or in independent t	direct, conseq hird party test	uential or reports		Tin	7440-31-5	100.00	
						Ľ '		Total	100.00	
						1.512.870				100.000

MICROCHIP Semiconductor Device Type	e: PG 24 (Lead) PDIP Wide Outline600° (المرابع)	Termi Co	nation Base A pper Alloy (C	lloy: u)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1267.01	(mg) Total	Mold Compound	% ot Total Weight	68.46
Silica, vitreous	60676-86-0	Mold Compound	58.191	1076.958	581,910	EME-G600	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.193	77.604	41,932		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.193	77.604	41,932		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.677	31.042	16,773		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.205	3.801	2,054		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	27.830	515.060	278,301			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	194+AG	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	
Silver	7440-22-4	Die Attach	0.104	1.917	1.036		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.032	0.596	322		Phosphorous	7723-14-0	0.08	
Gamma-butvrolactone	96-48-0	Die Attach	0.004	0.078	42			Total	100.00	u .
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	8361	Silver	7440-22-4	74	
Tin	7440-31-5	Plating on external leads (nins) - Matte Tin / annealed at 150°C for 1 hour	1 490	27 576	14 900	03013	Enoxy resin	Trade Secret	23	
101	1440 01 0	TOTALS:	100,000	1.850.730	1 000 000		Gamma-butyrolactone	96-48-0	3	
	4 0507	Total Mass	100.000	1,000.100	1,000,000		Gamma Baryrolacione	JO 40 0	100.00	
	1.0007	y Total Mass						lota	100.00	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EO Directiv		(KOHS Recast	Directive) and	a with EO	13.88	Total (mg)	Chip (Die)	% of Total Weight	0.75
Compliance with the above EU Directives has been verified via i	nternal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regular	cal substance is No of this document, t tory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidabl y regulatory scheme world-wide.	e and, to the b e impurity co	est of Microch acentration of	iip the			Total	100.00	y
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/p	nability standard fo lastics/	or plastics. You can access the UL iQTM family of databa	ses to obtain a	a test report a	t	0.56	(mg) Total	Wire Bond	% of Total Weight	0.03
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concerni the best of its know ecause it has been disclosure as trad es of the average we and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ty Data Sheets ided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by intract assem oxic metals co s.	ductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpor in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid avoices.	blied, with respect to the information provided in this det laries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	27.58	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.49
Microchip disclaims any duty to notify users of updates or chan otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Cor sers' reliance on the oducts.	ttent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	es, direct or in independent ti	direct, conseq nird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	
						1 850 730				100.000

Semiconductor Device Type: P and PI 28 (Lead) PDIP (Wide Outline600") (Q2 / QB)				nation Base pper Alloy ((Alloy: Cu)		Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Posic Substance	CAS Number	"Contained In"	% Total Weight	malpart		3245.23	(mg) Total	Mold Compound	% ot Total Weight	79.8
Eurod Silico		Meld Compound	57 AF6	Ing/part	ppm		Funned Silino	COC76-96-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	9 778	2330.000	97 780	EME-GEOUU	Fused Sinca Metal Hydro Oxide	Trade Secret	12.00	•
Fpoxy Resin	Trade Secret	Mold Compound	5 586	227,166	55 860		Enoxy 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	Mold Compound	0.399	16.226	3,990		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	9.984	406.006	99,837			Total	100.00	•
Iron	7439-89-6	Lead Frame	0.246	9.987	2,456	424.97	(mg) Total	Lead Frame	% of Total Weight	10.45
Silver	7440-22-4	Lead Frame	0.199	8.096	1,991	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.531	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	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	l
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	Lead Tape	Polyimide	25038-81-7	43.00	
Silver	7440-22-4	Die Attach	0.550	22.375	5,502		Poly - ethylene - terephthalate	25038-59-9	38.00	
Epoxy Resin	9003-36-5	Die Attach	0.110	4.474	1,100		NBR	9003-18-3	7.00	
Diluent	3101-60-8	Die Attach	0.055	2.236	550		Bismaleimide	79922-55-7	6.00	
Phenolic hardener	Trade secret	Die Attach	0.022	0.894	220		Phenol resin	28453-20-5 / 9016-83-5	6.00	
Amine type hardener	827-43-0	Die Attach	0.011	0.448	110			Total	100.00	
Dicyandiamide	461-58-5	Die Attach	0.002	0.073	18	30.50	(mg) Total	Die Attach	% of Total Weight	0.75
						CRM-10641				
Silicon	7440-21-3	Chip (Die)	7.500	305.003	75,000	CINI-1004L	Silver	7440-22-4	73	
Gold	7440-57-5	Wire Bond	0.200	8.133	2,000		Epoxy Resin	9003-36-5	15	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	50.834	12,500		Diluent	3101-60-8	7	
		TOTALS:	100.000	4,066.700	1,000,000		Phenolic hardener	Trade secret	3	
	4.0667	g Total Mass					Amine type hardener	827-43-0	1	
This semiconductor device and its homogenous materials	comply with EU Directive 2002/	95/EC (RoHS Directive), EU Directive 2011/65/EU (F	RoHS Recast	Directive) an	nd with EU		Dicyandiamide	461-58-5		
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).							Dicyandiamide	401 30 3	0	
Compliance with the above EU Directives has been verified	l via internal design controls, su	pplier declarations, and /or analytical test data.						Total	100.00	-
If a chemical substance is absent from the list above, the or Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of re	chemical substance is NOT an in date of this document, there is r egulatory concern for any regula	tentional ingredient in the semiconductor device a to credible reason to believe that the unavoidable tory scheme world-wide.	and, to the be impurity cor	est of Microc Icentration o	hip of the	305.00	Total (mg)	Chip (Die)	% of Total Weight	7.5
Molding compounds used by Microchip meet the UL94 V0 http://ul.com/global/eng/pages/offerings/industries/chemic	flammability standard for plastic cals/plastics/	s. You can access the UL iQTM family of database	es to obtain a	i test report a	at		Doped Silicon	7440-21-3	100	
The protective "tubes" is which the excellence duct is shi	nned are made from noturinul of	elevide (DVC) plastic "Window envelopes" used to		akina alin an				Total	100.00	
box and certain "reels" may be made from PVC plastic.	pped are made from polyvinyl c	nonde (PVC) plastic. Window envelopes used to	o noid the pa	cking slip or	i the outer			Total	100.00	
Microchip Technology Incorporated believes the informatik devices in their original packing materials is true and corre cannot guarantee the completeness and accuracy of data i raw material suppliers. Supplier information is often prote and raw material suppliers. Information is provided only as components. These estimates do not include trace levels of	on in this form concerning subs act to the best of its knowledge a n this form because it has been cted from disclosure as trade se s estimates of the average weigh of dopants, metals, and non-met	tances restricted by RoHS in Microchip Technolog not belief, as of the date listed in this form. Microc compiled based on the ranges provided in Materia crets and some information may not have been p t of these parts and the average weight of anticipa al materials contained within silicon devices (silic	gy Incorporat hip Technolo al Safety Data rovided by su ated significa on IC) in the	ed's semico ogy Incorpor I Sheets prov Ibcontract as Int toxic meta finished part	nductor rated vided by ssemblers als ts.	8.13	(mg) Total	Wire Bond	% of Total Weight	0.2
Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Inco in Microchip's quotations, sales order acknowledgement, a	warranty, express or implied, win orporated and its subsidiaries ar and invoices.	h respect to the information provided in this decl e contained in Microchip's standard terms and co	aration. The nditions of s	exclusive, lin ale. These ar	mited re provided		Doped Gold	7440-57-5	100	
Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of t (SGS) or of this Certificate of Compliance for semiconduct	changes to Material Content De the users' reliance on the inform or products.	clarations and shall not be liable for any damages ation in Material Content Declarations (MCD) or in	, direct or ind dependent th	lirect, conse hird party tes	equential or st reports			Total	100.00	
						50.83	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
						I		7440-31-5	100.00	
						1		Total	100.00	

4,064.667

100.000

	Pand PL 40 (Load) PD	NP (Mido Outline - 600*) (\$2 / \$1)	Termination Base Alloy: Copper Alloy (Cu) % Total				Package Homog 8.1 Electronics (e.g	geneous Materials: g. pc boards, displays)		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			5407.00	(Mald Commound	0/ of Total Mainh	70.0
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	5187.00	(mg) i otai	Mola Compouna	%ot Total weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	3734.640	574,560	EME-GE800	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	
Phenol Resin	Trade Secret	Mold Compound	5.586	363.090	55,860		Phenol Resin	Trade Secret	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	194+AG	Copper	7440-50-8	95.54	
Phosphorous	7440-66-6	Lead Frame	0.013	0.849	86		Silver	7439-89-6 7440-22-4	2.35	
Polvimide	25038-81-7	Lead Frame	0.022	1.398	215		Zinc	7440-66-6	0.13	
Poly - ethylene - terephthalate	25038-59-9	Lead Frame	0.019	1.235	190		Phosphorous	7723-14-0	0.08	
NBR	9003-18-3	Lead Frame	0.004	0.228	35			Total	100.00	
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	Lead Tape	Polyimide	25038-81-7	43.00	
Silver	7440-22-4	Die Attach	0.550	35.763	5,502		Poly - ethylene - terephthalate	25038-59-9	38.00	
Diluent	9003-36-5	Die Attach	0.110	7.152	550		NBR Bismaloimido	9003-18-3	7.00	
Phenolic hardener	Trade secret	Die Attach	0.022	1.428	220		Phenol resin	28453-20-5 / 9016-83-5	6.00	
Amine type hardener	827-43-0	Die Attach	0.011	0.717	110	1 1		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
						CRM-1064L				
Silicon	7440-21-3	Chip (Die)	7.500	487.500	75,000		Silver	7440-22-4	73	
Tin	7440-31-5	Plating on external leads (nins) - Matte Tin / annealed at 150°C for 1 hour	1 250	81 250	12,000		Diluent	3101-60-8	7	
	1110010	TOTALS:	100.000	6,500.000	1,000,000		Phenolic hardener	Trade secret	3	
	6.5000	g Total Mass		.,	,,		Amine type hardener	827-43-0	1	
This semiconductor device and its homogenous mate with EU Directive 2002/53/EC (End-of-Life Vehicles (El	rials comply with EU Dire LV) Directive).	ctive 2002/95/EC (RoHS Directive), EU Directive	2011/65/EU (Ro	HS Recast Dire	ective) and		Dicyandiamide	461-58-5	0	
Compliance with the above EU Directives has been ve	erified via internal design o	controls, supplier declarations, and /or analytica	l test data.					Total	100.00	
If a chemical substance is absent from the list above, Technology Incorporated's knowledge and belief as o the chemical substance, if any, is not below the thresh	the chemical substance is f the date of this documer hold of regulatory concern	s NOT an intentional ingredient in the semicondu It, there is no credible reason to believe that the n for any regulatory scheme world-wide.	uctor device and unavoidable im	l, to the best o purity concen	f Microchip tration of	487.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
Molding compounds used by Microchip meet the UL9 http://ul.com/global/eng/pages/offerings/industries/cho	4 V0 flammability standar emicals/plastics/	d for plastics. You can access the UL iQTM fami	ly of databases	to obtain a tes	t report at		Doped Silicon	7440-21-3	100	
The protective "tubes" in which the specific product is outer box and certain "reels" may be made from PVC	s shipped are made from plastic.	polyvinyl chloride (PVC) plastic. "Window envelo	opes" used to h	old the packing	g slip on the			Total	100.00	
Microchip Technology Incorporated believes the infor semiconductor devices in their original packing mater Technology Incorporated cannot guarantee the compil Safety Data Sheets provided by raw material suppliers been provided by subcontract assemblers and raw ma weight of anticipated significant toxic metals compon silicon devices (silicon IC) in the finished parts.	mation in this form conce rials is true and correct to leteness and accuracy of s. Supplier information is aterial suppliers. Informat ents. These estimates do	rning substances restricted by RoHS in Microch the best of its knowledge and belief, as of the d data in this form because it has been compiled b often protected from disclosure as trade secrets ion is provided only as estimates of the average not include trace levels of dopants, metals, and	ip Technology I ate listed in this based on the rar and some infor weight of these non-metal mate	Incorporated's form. Microch nges provided mation may no parts and the rials contained	ip in Material ot have average d within	13.00	(mg) Total	Wire Bond	%of Total Weight	0.2
Microchip Technology Incorporated does not provide limited product warranties provided by Microchip Tec These are provided in Microchip's quotations, sales o	any warranty, express or hnology Incorporated and rder acknowledgement, a	implied, with respect to the information provide I its subsidiaries are contained in Microchip's st nd invoices.	d in this declara andard terms ar	ntion. The excl and conditions of	usive, of sale.		Doped Gold	7440-57-5	100	
Microchip disclaims any duty to notify users of update consequential or otherwise, suffered by users or third third party test reports (SGS) or of this Certificate of C	es or changes to Material parties as a result of the compliance for semicondu	Content Declarations and shall not be liable for a users' reliance on the information in Material Co ctor products.	any damages, d Intent Declaratio	irect or indirect ons (MCD) or in	t, idependent			Total	100.00	
						81.25	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
						l	Tin	7440-31-5	100.00	
						6 406 750		Total	100.00	400.000
						0,490.750				100.000

	Termir Coj	ation Base A oper Alloy (Cu	lloy: u)			JEDEC 97 Product Marking and/or Pkg. Labeling e3				
Paoia Substance	CAS Number	"Contained In"	% Total Weight	malaart		1665.83	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Mold Compound	FZ 450	mg/part	ppm	EME CEROO	Europe Siling	60676.96.0	72.00	
Fused Silica Metal Hydro Oxide	Trade Secret	Mold Compound	8 778	183 2/1	374,560	EWIE-GEOUU	Metal Hydro Ovide	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	Mold Compound	0.399	8.329	3,990		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	9.984	208.409	99,837			Total	100.00	·
Iron	7439-89-6	Lead Frame	0.246	5.126	2,456	218.14	(mg) Total	Lead Frame	% of Total Weight	10.45
Silver	7440-22-4	Lead Frame	0.199	4.156	1,991	194+AG	Copper	7440-50-8	95.54	
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			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	Lead Tape	Polyimide	25038-81-7	43.00	
Silver	7440-22-4	Die Attach	0.550	11.485	5,502		Poly - ethylene - terephthalate	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		Prienoi resin	28453-20-5 / 9016-83-5	6.00	
Amine type nardener	827-43-0	Die Attach	0.011	0.230	110			lotal	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	
Gold	7440-57-5	Wire Bond	0.200	4.175	2,000		Epoxy Resin	9003-36-5	15	
Tin	7440-31-5	Plating 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:	100.000	2,087.500	1,000,000		Phenolic hardener	Trade secret	3	
	2.0875	g Total Mass					Amine type hardener	827-43-0	1	
This semiconductor device and its homogenous materials comp Directive 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	st Directive) a	nd with EU		Dicyandiamide	461-58-5	0	
Compliance with the above EII Directives has been verified via in	ternal design controls su	unlier declarations and /or analytical test da	ła					Total	0 100.00	
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date or chemical substance, if any, is not below the threshold of regulato	al substance is NOT an in this document, there is ry concern for any regul	ntentional ingredient in the semiconductor de no credible reason to believe that the unavoid atory scheme world-wide.	vice and, to the lable impurity c	best of Micro oncentration o	chip of the	156.56	Total (mg)	Chip (Die)	% of Total Weight	7.5
Molding compounds used by Microchip meet the UL94 V0 flamm: http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard for plasti stics/	cs. You can access the UL iQTM family of data	abases to obtair	a test report	at		Doped Silicon	7440-21-3	100	
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	re made from polyvinyl c	hloride (PVC) plastic. "Window envelopes" us	sed to hold the j	backing slip o	n the outer		1	Total	100.00	1
Microchip Technology Incorporated believes the information in the devices in their original packing materials is true and correct to t cannot guarantee the completeness and accuracy of data in this t raw material suppliers. Supplier information is often protected fr and raw material suppliers. Information is provided only as estim components. These estimates do not include trace levels of dope	his form concerning subs he best of its knowledge orm because it has been om disclosure as trade so ates of the average weig nts, metals, and non-me	stances restricted by RoHS in Microchip Tech and belief, as of the date listed in this form. M compiled based on the ranges provided in M screts and some information may not have be ht of these parts and the average weight of an tal materials contained within silicon devices	nology Incorpor licrochip Techn aterial Safety Da en provided by ticipated signifi (silicon IC) in th	ated's semico ology Incorpo nta Sheets pro subcontract a cant toxic me le finished par	onductor vrated vvided by assemblers tals rts.	4.18	(mg) Total	Wire Bond	% of Total Weight	0.2
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorporat in Microchip's quotations, sales order acknowledgement, and inv	ty, express or implied, w ed and its subsidiaries a oices.	ith respect to the information provided in this re contained in Microchip's standard terms ar	declaration. Th nd conditions of	e exclusive, li sale. These a	mited are provided		Doped Gold	7440-57-5	100	
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor pro-	es to Material Content De rs' reliance on the inforn lucts.	clarations and shall not be liable for any dam nation in Material Content Declarations (MCD)	ages, direct or i or independent	ndirect, conse third party te	equential or st reports			Total	100.00	
						26.09	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
							Tin	7440-31-5 Total	100.00 100.00	

2,086.456

100.000

	Semiconductor Device Type: L 28 (Lead) PLCC (L4)		Termi Co	nation Base A pper Alloy (C	lloy: u)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	E: L 28 (Lead) P									es
Death Onterfamore	0.10 N	"Contained In"	% Total Weight			818.39	(mg) Total	Mold Compound	% ot Total Weight	71.63
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm	5115 0.000			05.00	7
Silica, vitreous	60676-86-0	Mold Compound	60.886	695.635	608,855	EME-G600	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)	I rade Secret	Mold Compound	4.387	50.127	43,873	-	Phenolic Resin	I rade 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	J
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
7:	7440 07 7	Logi France	0.000	0.000	050	CDA151 +		7440 50 0	07.00	
Zirconium	7440-67-7	Lead Frame	0.026	0.293	256	Ag	Copper	7440-50-8	97.99	
Manganese	7439-96-5	Lead Frame	0.001	0.015	13	-	Silver	7440-22-4	1.91	
Silver Enguis regin	7440-22-4 Trada Saarat	Die Attach Die Attach	0.163	1.860	1,628	-	Zirconium	7440-67-7	0.10	
Epoxy resin	Trade Secret	Die Attach	0.051	0.576	506	-	Manganese	7439-96-5	0.01	l
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	8361J	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	
	1.1425	g Total Mass						Total	100.00	_
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directiv	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	13.82	Total (mg)	Chip (Die)	% of Total Weight	1.21
Compliance with the above Lo Directives has been vermed via h	internal design com	iois, supplier declarations, and for analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemi- Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulat	cal substance is NC of this document, the ory concern for an	OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidably y regulatory scheme world-wide.	e and, to the b le impurity co	est of Microch ncentration of	ip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	nability standard fo lastics/	r plastics. You can access the UL iQTM family of databa	ses to obtain	a test report a	t	0.80	(mg) Total	Wire Bond	% of Total Weight	0.07
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in a devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concernin the best of its know ecause it has been disclosure as trade is of the average we and non-metal mat	ng substances restricted by RoHS in Microchip Technolo vledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov ight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ety Data Sheet vided by subco d significant to finished parts	ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s.	ductor ated cannot raw blers and omponents.			Total	100.00	_
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsidi voices.	lied, with respect to the information provided in this de aries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	14.17	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.24
Microchip disclaims any duty to notify users of updates or change otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Con sers' reliance on the oducts.	tent Declarations and shall not be liable for any damage • information in Material Content Declarations (MCD) or	es, direct or in independent t	direct, conseq hird party test	uential or reports		Tin	7440-31-5	100.00	
						L		Total	100.00	
						1,142.530				100.000

Semiconductor Device Type: NHE 32 (Lead) PLCC (P3)			Termir Co	ation Base A oper Alloy (C	Alloy: u)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			677 40	(mg) Total	Mold Compound	% of Total Weight	60
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	0/1.40	(ing) rotai	mola compound	/ot rotal Weight	
Silica, vitreous	60676-86-0	Mold Compound	51.000	575.790	510,000	EME-G600	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	
NICKIE (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	CDA151 + Ag	Copper (Cu)	7440-50-8	93.00	
Magnesium (Mg)	7439-95-4	Lead Frame	0.064	0.723	640	4	Nickle (Ni)	7440-02-0	4.00	
Silver (Ag)	7440-22-4	Lead Frame	0.576	6.503	5,760		Silicon (Si)	7440-21-3	1.00	
Silver (Ag)	7440-22-4	Die Attach	0.064	0.723	640	4	Magnesium (Mg)	/439-95-4	0.20	
Epoxy Resin	Trade Secret	Die Attach	0.014	0.154	136		Silver (Ag)	7440-22-4	1.80	
Copper (Cu)	7440-50-8	Die Attach	0.002	0.027	24			Total	100.00	
Silicon	7440-21-3	Chip (Die)	4.820	54.418	48,200	0.90	(mg) I otal	Die Attach	% of Total Weight	0.08
Gold	7440-57-5	Wire Bond	0.100	1.129	1,000	8340	Silver (Ag)	7440-22-4	80	
lin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	33.870	30,000		Epoxy Resin	Trade Secret	17	
		TOTALS:	100.000	1,129.000	1,000,000		Copper (Cu)	7440-50-8	3	
	1.1290	g Total Mass						lotal	100.00	
his semiconductor device and its homogenous materials comp U Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	oly with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/	65/EU (RoHS F	Recast Directiv	ve) and with	54.40				
						54.42	Total (mg)	Chip (Die)	% of Total Weight	4.82
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemi	nternal design contr	ols, supplier declarations, and /or analytical test	data.	the best of M	icrochin	54.42	Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	4.82
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 of hemical substance, if any, is not below the threshold of regular holding compounds used by Microchip meet the UL94 V0 flamm	nternal design contr cal substance is NO of this document, the ory concern for any pability standard for	ols, supplier declarations, and /or analytical test an intentional ingredient in the semiconductor re is no credible reason to believe that the unav regulatory scheme world-wide. plastics. You can access the UL iQTM family of o	data. device and, to oidable impur databases to o	the best of N ity concentral btain a test re	licrochip ion of the port at	1.13	I otal (mg) Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	0.1
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 of hemical substance, if any, is not below the threshold of regulat olding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pl he protective "tubes" in which the specific product is shipped a uter box and certain "reels" may be made from PVC plastic.	nternal design contr cal substance is NO f this document, th ory concern for any nability standard for astics/ are made from polyn	ols, supplier declarations, and /or analytical test an intentional ingredient in the semiconductor re is no credible reason to believe that the unav regulatory scheme world-wide. plastics. You can access the UL iQTM family of a inyl chloride (PVC) plastic. "Window envelopes"	data. device and, to oidable impur databases to o ' used to hold	the best of N ity concentrat btain a test re the packing s	licrochip ion of the port at lip on the	1.13	I otal (mg) 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	0.1
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 of hemical substance, if any, is not below the threshold of regulat lolding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pl he protective "tubes" in which the specific product is shipped a uter box and certain "reels" may be made from PVC plastic. licrochip Technology Incorporated believes the information in te emiconductor devices in their original packing materials is true corporated cannot guarantee the completeness and accuracy of heets provided by raw material suppliers. Supplier information ubcontract assemblers and raw material suppliers. Information ignificant toxic metals components. These estimates do not inco-	nternal design contr cal substance is NO' of this document, th ory concern for any hability standard for astics/ are made from polyn his form concerning and correct to the I is often protected fi is provided only as clude trace levels of	ols, supplier declarations, and /or analytical test an intentional ingredient in the semiconductor re is no credible reason to believe that the unav regulatory scheme world-wide. plastics. You can access the UL iQTM family of o inyl chloride (PVC) plastic. "Window envelopes" usubstances restricted by RoHS in Microchip Te test of its knowledge and belief, as of the date li recause it has been compiled based on the rang om disclosure as trade secrets and some inform estimates of the average weight of these parts a dopants, metals, and non-metal materials conta	data. device and, to oidable impur databases to o ' used to hold chnology Inco sted in this for es provided in nation may no nd the average ined within sili	the best of M ity concentral btain a test re the packing s m. Microchip Material Safe t have been p e weight of an con devices (licrochip ion of the port at lip on the Technology ty Data rovided by ticipated silicon IC) in	1.13	I otal (mg) Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight 100 100.00 % of Total Weight 100 100 100	0.1
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 of hemical substance, if any, is not below the threshold of regulat lolding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pl he protective "tubes" in which the specific product is shipped a uter box and certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information in t emiconductor devices in their original packing materials is true corporated cannot guarantee the completeness and accuracy of heets provided by raw material suppliers. Supplier information ignificant toxic metals components. These estimates do not in the finished parts. icrochip Technology Incorporated does not provide any warrai roduct warranties provided by Microchip Technology Incorpora- rovided in Microchip's quotations, sales order acknowledgeme	nternal design contr cal substance is NO' of this document, the ory concern for any ability standard for astics/ are made from polyu- this form concerning and correct to the i of data in this form 1 is often protected fi is provided only as clude trace levels of nty, express or impli- ted and its subsidia nt, and invoices.	ols, supplier declarations, and /or analytical test an intentional ingredient in the semiconductor re is no credible reason to believe that the unav regulatory scheme world-wide. plastics. You can access the UL iQTM family of of inyl chloride (PVC) plastic. "Window envelopes' usubstances restricted by RoHS in Microchip Te test of its knowledge and belief, as of the date lis recause it has been compiled based on the rang om disclosure as trade secrets and some inform estimates of the average weight of these parts a dopants, metals, and non-metal materials contai ed, with respect to the information provided in the rise are contained in Microchip's standard terms	data. device and, to oidable impur databases to o ' used to hold schnology Inco sted in this for es provided in nation may no nation may no and the averagy ined within sili	the best of M ity concentrat btain a test re the packing s m. Microchip Material Safe t have been p weight of an con devices (b. The exclusi ts of sale. The	licrochip ion of the port at lip on the Technology ty Data rovided by ticipated silicon IC) in ve, limited sse are	34.42	(mg) Total (mg) Total (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.1
ompliance with the above EU Directives has been verified via in a chemical substance is absent from the list above, the chemic achonology Incorporated's knowledge and belief as of the date of the achonology Incorporated's knowledge and belief as of the date of the achonology Incorporated's knowledge and belief as of the date of the state state of the date of the achonology incorporated state of the date of the protective "tubes" in which the specific product is shipped a ther box and certain "reels" may be made from PVC plastic. Terrochip Technology Incorporated believes the information in the miconductor devices in their original packing materials is true corporated cannot guarantee the completeness and accuracy of heets provided by raw material suppliers. Supplier information ubcontract assemblers and raw material suppliers. Information glificant toxic metals components. These estimates do not into e finished parts. Icrochip Technology Incorporated does not provide any warrar roduct warranties provided by Microchip Technology Incorpora- tovided in Microchip's quotations, sales order acknowledgeme icrochip disclaims any duty to notify users of updates or chang onsequential or otherwise, suffered by users or third parties as ird party test reports (SGS) or of this Certificate of Compliance	nternal design contr cal substance is NO' of this document, th ory concern for any ability standard for astics/ are made from polyu his form concerning of data in this form l of data in this form l is often protected fi is provided only as clude trace levels of nty, express or impli- ted and its subsidia nt, and invoices. ges to Material Contr a result of the user: for semiconductor	ols, supplier declarations, and /or analytical test an intentional ingredient in the semiconductor re is no credible reason to believe that the unav regulatory scheme world-wide. plastics. You can access the UL iQTM family of of inyl chloride (PVC) plastic. "Window envelopes" usubstances restricted by RoHS in Microchip Te test of its knowledge and belief, as of the date li lecause it has been compiled based on the rang om disclosure as trade secrets and some inforn estimates of the average weight of these parts a dopants, metals, and non-metal materials contal ed, with respect to the information provided in t rises are contained in Microchip's standard terms wit Declarations and shall not be liable for any d ' reliance on the information in Material Content products.	data. device and, to oidable impur databases to o ' used to hold inchnology Inco sted in this for es provided in nation may no nd the average ined within sill his declaration a and condition amages, direcc t Declarations	the best of M ity concentrat btain a test re the packing s m. Microchip Material Safe t have been p a weight of an con devices (h. The exclusi ns of sale. The t or indirect, (MCD) or inde	licrochip ion of the port at lip on the Technology ty Data rovided by ticipated silicon IC) in ve, limited sse are pendent	34.42	(mg) Total (mg) Total (mg) Total (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	% of Total Weight 100 100.00	4.82 0.1
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 of nemical substance, if any, is not below the threshold of regulat olding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pl he protective "tubes" in which the specific product is shipped uter box and certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information in 1 emiconductor devices in their original packing materials is true corporated cannot guarantee the completeness and accuracy of heets provided by raw material suppliers. Supplier information ubcontract assemblers and raw material suppliers. Information gnificant toxic metals components. These estimates do not inco- te finished parts. icrochip Technology Incorporated does not provide any warrar roduct warranties provided by Microchip Technology Incorpora- rovided in Microchip's quotations, sales order acknowledgeme icrochip disclaims any duty to notify users of updates or chang- onsequential or otherwise, suffered by users or third parties as ird party test reports (SGS) or of this Certificate of Compliance	nternal design contr cal substance is NO' of this document, th ory concern for any hability standard for astics/ are made from polyn his form concerning and correct to the I is often protected fi is provided only as clude trace levels of nty, express or impli- ted and its subsidia nt, and invoices. ges to Material Contr a result of the users for semiconductor	ols, supplier declarations, and /or analytical test an intentional ingredient in the semiconductor re is no credible reason to believe that the unav regulatory scheme world-wide. plastics. You can access the UL iQTM family of c inyl chloride (PVC) plastic. "Window envelopes" u substances restricted by RoHS in Microchip Te test of its knowledge and belief, as of the date li recause it has been compiled based on the rang om disclosure as trade secrets and some inform estimates of the average weight of these parts a dopants, metals, and non-metal materials contal ed, with respect to the information provided in the rises are contained in Microchip's standard terms ent Declarations and shall not be liable for any d i' reliance on the information in Material Content products.	data. device and, to oidable impur databases to o ' used to hold echnology Inco sted in this for es provided in ation may no nd the average ined within sill his declaration s and condition amages, direct t Declarations	the best of N ity concentrat btain a test re the packing s "porated's "Material Safe t have been p weight of an con devices (h. The exclusi ns of sale. The t or indirect, (MCD) or inde	licrochip ion of the port at lip on the Technology ty Data rovided by ticipated silicon IC) in ve, limited ese are pendent	34.42	(mg) Total (mg) Total (mg) Total (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	% of Total Weight 100 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00 100.00	4.82 0.1

	Semiconductor Device Type: L & NJE 44 (Lead) PLCC (T2/TC) Contained In"				lloy: J)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	J. LOINJE 44	(Lead) PLCC (T2/TC)	% Total	1				ГГ		63
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1807.79	(mg) Total	Mold Compound	% ot Total Weight	76.1
Silica, vitreous	60676-86-0	Mold Compound	64.685	1536.618	646,850	EME-G600	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.661	110.727	46,611	1	Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.661	110.727	46,611	1	Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.864	44.291	18,645	1	Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.228	5.423	2,283		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	21.460	509.786	214,598	1		Total	100.00	
Silver	7440-22-4	Lead Frame	0.417	9.911	4,172	520.24	(mg) Total	Lead Frame	% of Total Weight	21.9
					.,	020121	(ing) ioui	Zoda i ramo	//or rotal froight	2.10
Zirconium	7440-67-7	Lead Frame	0.022	0.520	219	CDA151+AG	Copper	7440-50-8	97 99	
Manganese	7430-06-5	Lead Frame	0.001	0.026	11		Silver	7440 32 4	1.01	
Silver	74/0-22-4	Die Attach	0.001	2.461	1.036		Zirconium	7440-22-4	0.10	
Epoxy resin	Trade Secret	Die Attach	0.032	0.765	322	-	Manganoso	7430-06-5	0.10	
Commo butiroloctono		Die Attach	0.002	0.100	12	4	Waligaliese	7435-50-5	100.00	
Gainina-butyrolacione	7440-04-2	Chip (Dio)	0.004	0.100	9 700	0.00	() T	I otal	100.00	
Silicon	7440-21-3	Chip (Die)	0.870	20.007	8,700	3.33	(mg) I otai	Die Attach	% of 1 otal weight	0.14
Gold	7440-57-5	Wire Bond	0.050	1.188	500	8361J	Silver	7440-22-4	74	
lin	/440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.940	22.330	9,400		Epoxy resin	Trade Secret	23	
		TOTALS:	100.000	2,375.540	1,000,000		Gamma-butyrolactone	96-48-0	3	
	2.3755	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials compl EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	y with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/6	5/EU (RoHS Re	ecast Directive) and with	20.67	Total (mg)	Chip (Die)	% of Total Weight	0.87
Compliance with the above EU Directives has been verified via in	ternal design contro	ols, supplier declarations, and /or analytical test d	ata.				Doped Silicon	7440-21-3	100	
Ta chemical substance is absent from the first above, the chemic. Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulato Molding compounds used by Microchip meet the UL94 V0 flamm	a substance is NOI f this document, the ry concern for any ability standard for	an intentional ingredient in the semiconductor of ire is no credible reason to believe that the unavo regulatory scheme world-wide. plastics. You can access the UL iQTM family of da	idable impurity	tain a test repo	ocnip n of the ort at	1 19	(ma) Total	Wire Bond	% of Total Weight	0.05
http://ul.com/global/eng/pages/offerings/industries/chemicals/pla The protective "tubes" in which the specific product is shipped a	stics/ re made from polyv	inyl chloride (PVC) plastic. "Window envelopes" (used to hold th	e packing slip	on the		Doped Gold	7440-57-5	100	
outer box and certain "reels" may be made from PVC plastic.							Bopod Cold	1110010	100	
Vicrochip Technology Incorporated believes the information in the devices in their original packing materials is true and correct to the cannot guarantee the completeness and accuracy of data in this i raw material suppliers. Supplier information is often protected fr and raw material suppliers. Information is provided only as estim components. These estimates do not include trace levels of dopa	is form concerning ne best of its knowl form because it has om disclosure as tra ates of the average nts, metals, and no	substances restricted by RoHS in Microchip Tec edge and belief, as of the date listed in this form. been compiled based on the ranges provided in ide secrets and some information may not have b weight of these parts and the average weight of a n-metal materials contained within silicon devices	hnology Incorp Microchip Tec Material Safety een provided I anticipated sign s (silicon IC) in	porated's semi hnology Incor y Data Sheets by subcontract nificant toxic n the finished p	conductor porated provided by assemblers netals arts.			Total	100.00	
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorporal provided in Microchip's quotations, sales order acknowledgemer	ty, express or impli ed and its subsidia it, and invoices.	ed, with respect to the information provided in thi ries are contained in Microchip's standard terms	s declaration. and conditions	The exclusive of sale. These	limited are	22.33	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.94
Microchip disclaims any duty to notify users of updates or chang or otherwise, suffered by users or third parties as a result of the u reports (SGS) or of this Certificate of Compliance for semiconduc	es to Material Conte sers' reliance on th tor products.	ent Declarations and shall not be liable for any da le information in Material Content Declarations (M	mages, direct ICD) or indepe	or indirect, con ndent third par	nsequential ty test		Tim	7440-31-5	100.00	
						L		Total	100.00	
						2.375.540				100.000

Semiconductor Device Type: L 68 (Lead) PLCC (W2 / WF)			Termir Co	nation Base A pper Alloy (C	Alloy: u)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Typ	e. L OO (Lead) PL	"Contained In"	% Total							65
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	1380.06	(mg) Total	Mold Compound	% ot Total Weight	28.28
Silica, vitreous	60676-86-0	Mold Compound	24.038	1173.054	240,380	EME-G600	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	1.732	84.529	17,322		Epoxy Resin	Trade Secret	6.13	
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	
Carbon Black	1333-86-4	Mold Compound	0.085	4.140	848		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	22.087	1077.843	220,869			Total	100.00	
Silver	7440-22-4	Lead Frame	0.429	20.954	4,294	1099.95	(mg) Total	Lead Frame	% of Total Weight	22.54
Zirconium	7440-67-7	Lead Frame	0.023	1.100	225	CDA151+AG	Copper	7440-50-8	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	J
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	13.31
Epoxy Resin	13561-08-5	Die Attach	0.333	16.238	3,328	2200D	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	Func	tionalized 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	J
	<u>4.8800 g</u>	j Total Mass						Total	100.00	
his semiconductor device and its homogenous materials comp U Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ly with EU Directive 2	002/95/EC (RoHS Directive), EU Directive 2011/6	5/EU (RoHS Re	cast Directive) and with	600.73	Total (mg)	Chip (Die)	% of Total Weight	12 31
Compliance with the above EU Directives has been verified via in									/or rotal weight	12.51
	nternal design control	s, supplier declarations, and /or analytical test of	lata.				Doped Silicon	7440-21-3	100 100.00	12.01
f 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 regulat lolding compounds used by Microchio meet the UL94 V0 flamm	nternal design control cal substance is NOT of this document, then ory concern for any re ability standard for pl	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of e is no credible reason to believe that the unavo egulatory scheme world-wide. lastics. You can access the UL iOTM family of da	lata. levice and, to t idable impurity atabases to obj	he best of Mic y concentratio ain a test repo	rochip n of the ort at		Doped Silicon	7440-21-3 Total	100 100.00	
f 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 regulat lolding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pl	nternal design control cal substance is NOT of this document, ther ory concern for any re ability standard for pl astics/	s, supplier declarations, and /or analytical test o an intentional ingredient in the semiconductor o e is no credible reason to believe that the unavo gulatory scheme world-wide. lastics. You can access the UL iQTM family of da	lata. levice and, to t idable impurit atabases to obf	he best of Mic y concentratio ain a test repo	rochip n of the ort at	249.86	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 %of Total Weight	5.12
f a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date c hemical substance, if any, is not below the threshold of regulat folding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pl: he protective "tubes" in which the specific product is shipped a uter box and certain "reels" may be made from PVC plastic.	nternal design control cal substance is NOT of this document, ther ory concern for any re lability standard for pl astics/ are made from polyvir	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of e is no credible reason to believe that the unavo agulatory scheme world-wide. lastics. You can access the UL iQTM family of da nyl chloride (PVC) plastic. "Window envelopes"	lata. levice and, to t idable impurity atabases to obt used to hold th	he best of Mic y concentratio ain a test repo ne packing slip	rochip n of the ort at o on the	249.86	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	5.12
f a chemical substance is absent from the list above, the chemic echnology Incorporated's knowledge and belief as of the date of themical substance, if any, is not below the threshold of regulat folding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pl he protective "tubes" in which the specific product is shipped a uter box and certain "reels" may be made from PVC plastic. flicrochip Technology Incorporated believes the information in t evices in their original packing materials is true and correct to 0 annot guarantee the completeness and accuracy of data in this semblers and raw material suppliers. Information is provided tetals components. These estimates do not include trace levels arts.	Anternal design control cal substance is NOT of this document, ther ory concern for any re hability standard for pl astics/ are made from polyvir his form concerning s the best of its knowled form because it has b om disclosure as trad only as estimates of tl of dopants, metals, a	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of e is no credible reason to believe that the unavo agulatory scheme world-wide. lastics. You can access the UL iQTM family of dr nyl chloride (PVC) plastic. "Window envelopes" substances restricted by RoHS in Microchip Tec dge and belief, as of the date listed in this form. seen compiled based on the ranges provided in de secrets and some information may not have I he average weight of these parts and the averag und non-metal materials contained within silicor	lata. levice and, to t idable impurit atabases to obi used to hold th hnology Incorp Microchip Tec Material Safety been provided e weight of ant o devices (silico	he best of Mic y concentratio ain a test report he packing slip borated's sem hnology Incor Data Sheets p by subcontrat icipated signi on IC) in the fil	rochip n of the ort at o on the iconductor porated provided by it ficant toxic nished	249.86	Ooped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100 100.00	5.12
f a chemical substance is absent from the list above, the chemi icchnology Incorporated's knowledge and belief as of the date of themical 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/pl 'he protective "tubes" in which the specific product is shipped a uter box and certain "reels" may be made from PVC plastic. flicrochip Technology Incorporated believes the information in t levices in their original packing materials is true and correct to p annot guarantee the completeness and accuracy of data in this semblers and raw material suppliers. Information is provided tetals components. These estimates do not include trace levels arts. licrochip Technology Incorporated does not provide any warrar roduct warranties provided by Microchip Technology Incorpora rovided in Microchip's quotations, sales order acknowledgemen	Anternal design control cal substance is NOT of this document, ther ory concern for any re hability standard for pl astics/ are made from polyvir this form concerning the best of its knowler form because it has to om disclosure as trad- only as estimates of the of dopants, metals, a tty, express or implied ted and its subsidiarient, and invoices.	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of e is no credible reason to believe that the unavo agulatory scheme world-wide. Iastics. You can access the UL iQTM family of dr nyl chloride (PVC) plastic. "Window envelopes" substances restricted by RoHS in Microchip Tec dge and belief, as of the date listed in this form. ween compiled based on the ranges provided in the average weight of these parts and the averag und non-metal materials contained within silicor d, with respect to the information provided in th es are contained in Microchip's standard terms	lata. levice and, to t idable impurit atabases to obt used to hold th hnology Incorp Microchip Tec Material Safety been provided e weight of ant o devices (silico is declaration. and conditions	he best of Mic y concentratio ain a test report he packing slip borated's sem hnology Incor Data Sheets p by subcontrat icipated signi to IC) in the fil The exclusive of sale. Thes	rochip n of the ort at o on the iconductor porated provided by it ficant toxic nished , limited e are	249.86 899.87	(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 100 100 100.00 % of Total Weight 100.00	5.12
f a chemical substance is absent from the list above, the chemical fechnology Incorporated's knowledge and belief as of the date of hemical 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/pl 'he protective "tubes" in which the specific product is shipped inter box and certain "reels" may be made from PVC plastic. flicrochip Technology Incorporated believes the information in t levices in their original packing materials is true and correct to annot guarantee the completeness and accuracy of data in this aw material suppliers. Supplier information is often protected fr ssemblers and raw material suppliers. Information is provided arts. licrochip Technology Incorporated does not provide any warrar roduct warranties provided by Microchip Technology Incorpora- rovided in Microchip's quotations, sales order acknowledgemen licrochip disclaims any duty to notify users of updates or chang rotherwise, suffered by users or third parties as a result of the aports (SGS) or of this Certificate of Compliance for semicondu	Anternal design control cal substance is NOT of this document, ther ory concern for any re hability standard for pi astics/ are made from polyvin this form concerning e the best of its knowler form because it has b 'om disclosure as trac only as estimates of ti of dopants, metals, a hty, express or implier ited and its subsidiarien th, and invoices. Jes to Material Conten users' reliance on the ctor products.	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of e is no credible reason to believe that the unavo ggulatory scheme world-wide. lastics. You can access the UL iQTM family of di- nyl chloride (PVC) plastic. "Window envelopes" substances restricted by RoHS in Microchip Tec dge and belief, as of the date listed in this form. been compiled based on the ranges provided in le secrets and some information may not have l he average weight of these parts and the averag und non-metal materials contained within silicor d, with respect to the information provided in th es are contained in Microchip's standard terms at Declarations and shall not be liable for any da information in Material Content Declarations (M	lata. levice and, to t idable impurit; atabases to obi used to hold th hnology Incorr Microchip Tec Material Safety oen provided e weight of ant d devices (silic is declaration. and conditions mages, direct of CCD) or independing	he best of Micc y concentratio ain a test repor- he packing slip porated's sem hnology Incor Data Sheets p by subcontrac icipated signii on IC) in the fil The exclusive of sale. Thes or indirect, con- ndent third pa	rochip n of the ort at o on the iconductor porated provided by it ficant toxic nished , limited e are nsequential rty test	249.86	(mg) Total Opped Gold (mg) Total Tin	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 100 100 100.00 % of Total Weight 100.00 % of Total Weight 100.00	5.12
a chemical substance is absent from the list above, the chemical substance, if any, is not below the threshold of regulat olding compounds used by Microchip meet the UL94 V0 flamm ttp://ul.com/global/eng/pages/offerings/industries/chemicals/pl he protective "tubes" in which the specific product is shipped a uter box and certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information in t svices in their original packing materials is true and correct to innot guarantee the completeness and accuracy of data in this w material suppliers. Supplier information is often protected fr semblers and raw material suppliers. Information is provided etals components. These estimates do not include trace levels arts.	Anternal design control cal substance is NOT of this document, ther ory concern for any re hability standard for pl astics/ are made from polyvir the best of its knowler form because it has be om disclosure as trac- only as estimates of ti of dopants, metals, a hty, express or implier ted and its subsidiarient, and invoices. ges to Material Conten users' reliance on the ctor products.	s, supplier declarations, and /or analytical test of an intentional ingredient in the semiconductor of e is no credible reason to believe that the unavo agulatory scheme world-wide. lastics. You can access the UL iQTM family of da nyl chloride (PVC) plastic. "Window envelopes" substances restricted by RoHS in Microchip Tec dge and belief, as of the date listed in this form. teen compiled based on the ranges provided in le secrets and some information may not have le he average weight of these parts and the averag ind non-metal materials contained within silicor d, with respect to the information provided in th es are contained in Microchip's standard terms at Declarations and shall not be liable for any da e information in Material Content Declarations (N	lata. levice and, to t idable impurity atabases to obin used to hold th hnology Incorr Microchip Tec Microchip Tec Microchip Tec Microchip Tec is declaration. and conditions mages, direct of ICD) or indepen	he best of Mic y concentratio ain a test repor- ne packing slip borated's sem hnology Incor Data Sheets p by subcontrac icipated signi nn IC) in the fii The exclusive of sale. Thes or indirect, coin ndent third pa	rochip n of the ort at o on the iconductor porated provided by t ficant toxic nished , limited e are nsequential rty test	249.86 899.87	(mg) Total Doped Gold (mg) Total Tin	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 Total	100 100.00 % of Total Weight 100 100.00 % of Total Weight 100.00 100.00	5.12

Semiconductor Device Type: MG 16 (Lead) QFN 3x3x0.9mm (P9)			Termination Base Alloy: Copper Alloy (Cu)				Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Semiconductor Device Typ	De: MG 16 (Lead) QFN 3x3x0.9mm (P9)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	13.79	(mg) Total	Mold Compound	% ot Total Weight	63.82
			-			EME-	Silica fused	60676-86-0	90.00	
Silica, fused	60676-86-0	Mold Compound	57.438	12.407	574,380	G770HCD	Olitea, rasea	00010 00 0	50.00	
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	J
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	194+AG	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	1 1
Acrylate resins Proprietary	Trade Secret	Die Attach	0.063	0.014	630		Phosphorous	7723-14-0	0.08	1 1
Treated silica	Trade Secret	Die Attach	0.007	0.002	70	-		Total	100.00	4
Heterocyclic organic compound	Trade Secret	Die Attach	0.007	0.002	70	0.09	(mg) Total	Die Attech	% of Total Waight	0.25
	7440.04.0	Ohia (Dia)	0.007	0.002	50,500	0.00	(ing) Total	Die Attach		0.35
Silicon	7440-21-3	Chip (Die)	5.350	1.156	53,500	82001	Silver	7440-22-4	78	
Göld	7440-57-5	wire Bond	1.840	0.397	18,400	-	Acrylate resins Proprietary	Trade Secret	18	4 1
Lin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	5.310	1.147	53,100		I reated silica	Trade Secret	2	
		TOTALS:	100.000	21.600	1,000,000	Hete	rocyclic organic compound	I rade Secret	2	1
	0.0216	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials cor Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	nply with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	1.16	Total (mg)	Chip (Die)	% of Total Weight	5.35
Compliance with the above EU Directives has been verified via	internal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chen Technology Incorporated's knowledge and belief as of the date chemical substance if any is not below the threshold of regul	nical substance is No of this document, t	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidabl v regulatory scheme world-wide	e and, to the b le impurity cor	est of Microch acentration of	ip the		<u> </u>	Total	100.00	2
Molding compounds used by Microchip meet the UL94 V0 flam http://ul.com/global/eng/pages/offerings/industries/chemicals/	mability standard fo plastics/	r plastics. You can access the UL iQTM family of databa	ses to obtain a	i test report a	t	0.40	(mg) Total	Wire Bond	% of Total Weight	1.84
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	d are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct t guarantee the completeness and accuracy of data in this form material suppliers. Supplier information is often protected fror raw material suppliers. Information is provided only as estima These estimates do not include trace levels of dopants, metals	n this form concerni o the best of its kno because it has been n disclosure as trad tes of the average w , and non-metal ma	ng substances restricted by RoHS in Microchip Technolo wedge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ty Data Sheets vided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by ntract assem oxic metals co	ductor ated cannot raw blers and omponents.			Total	100.00	<u> </u>
Microchip Technology Incorporated does not provide any warr product warranties provided by Microchip Technology Incorpo in Microchip's quotations, sales order acknowledgement, and	anty, express or imp rated and its subsid invoices.	blied, with respect to the information provided in this de iaries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	1.15	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	% of Total Weight	5.31
Microchip disclaims any duty to notify users of updates or cha otherwise, suffered by users or third parties as a result of the ((SGS) or of this Certificate of Compliance for semiconductor p	nges to Material Cor users' reliance on th roducts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or ind independent th	direct, conseq hird party test	uential or reports		Tin	7440-31-5	100.00	
						I	<u> </u>	Total	100 00	9
						21,600		i otai	.00.00	100 000

Semiconductor Device Type: ML 16 (Lead) QFN 4x4mm (D5 / DS) Contained In"			Termination Base Alloy: Copper Alloy (Cu)				Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Semiconductor Device	Type. ML TO (Lead	"Contained In"	% Total	r						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	19.49	(mg) Total	Mold Compound	% ot Total Weight	46.75
Cilian fund	60676.96.0	Mold Compound	40.075	17 5 45	420 750	EME-	Silica, fused	60676-86-0	90.00	
Silica, tused Enony Resin (NLP # 500-033-5)	50575-86-0 Trade Secret	Mold Compound	42.075	17.545	420,750	GITHED	w Resin (NI P # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.207	0.945	22,674	Lpo	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		J	Total	100.00	U .
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	194+AG	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	8200T	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.790	0.329	7,900		Acrylate resins Proprietary	Trade Secret	18	
lin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	1.230	29,500		I reated silica	Trade Secret	2	
		TOTALS:	100.000	41.700	1,000,000	Hete	erocyclic organic compound	I rade Secret	2	J
	0.0417	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 internal design con	trols, supplier declarations, and /or analytical test data.		·		3.29	Total (mg)	Chip (Die) 7440-21-3	% of Total Weight	7.89
If a chemical substance is absent from the list above, the c Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of re	hemical substance is No date of this document, t gulatory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidabl y regulatory scheme world-wide.	e and, to the b le impurity cor	est of Microch acentration of	iip the			lotai	100.00	
Molding compounds used by Microchip meet the UL94 V0 f http://ul.com/global/eng/pages/offerings/industries/chemic	lammability standard fo als/plastics/	r plastics. You can access the UL iQTM family of databas	ses to obtain a	i test report a	t	0.33	(mg) Total	Wire Bond	% of Total Weight	0.79
The protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic.	oped are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		JGPSSI (D02)	7440-57-5	100	
Microchip Technology Incorporated believes the informatic devices in their original packing materials is true and corre guarantee the completeness and accuracy of data in this fo material suppliers. Supplier information is often protected raw material suppliers. Information is provided only as esti These estimates do not include trace levels of dopants, me	on in this form concerni tot to the best of its kno rm because it has been from disclosure as trad imates of the average w tals, and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ty Data Sheets vided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by ntract assem oxic metals co	ductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any v product warranties provided by Microchip Technology Inco in Microchip's quotations, sales order acknowledgement, a	varranty, express or imp prporated and its subsid nd invoices.	plied, with respect to the information provided in this dec laries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	1.23	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.95
Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of t (SGS) or of this Certificate of Compliance for semiconductor	changes to Material Cor he users' reliance on the or products.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	es, direct or ind independent th	direct, conseq hird party test	uential or reports			7440-31-5	100.00	
								Total	100.00	-
						41.70)			100.000

MICROCHIP Semiconductor Device Ty	Semiconductor Device Type: ML 20 (Lead) QFN 4x4mm (G4 / GM) Basic Substance CAS Number "Contained In"			nation Base A oper Alloy (C	uloy: u)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays) 22.31 (mg) Total Mold Compound % of Total We				JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	22.31	(mg) Total	Mold Compound	% ot Total Weight	51.79
		·	-			EME-	Silica fused	60676-86-0	90.00	
Silica, fused	60676-86-0	Mold Compound	46.611	20.080	466,110	G770HCD	D : (111 D // 500 000 5)	T 1 0 1	1.05	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.512	1.082	25,118	Ерох	Phonolic Posin Resin (NLP # 500-033-5)	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.155	0.067	1 554		Carbon Black	1333-86-4	4.85	
Copper	7440-50-8	Lead Frame	36.404	15.683	364.040	1	Carbon Black	Total	100.00	1
Tin	7440-31-5	Lead Frame	0.093	0.040	934	16.10	(mg) Total	Lead Frame	% of Total Weight	37.37
						EFTEC64T +				
Silver	7440-22-4	Lead Frame	0.712	0.307	7,119	Ag	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	/440-47-3	0.25	
I reated silica	Trade Secret	Die Attach	0.027	0.012	270	0.50	() = ()	Total	100.00	1.05
Silicon	7440 21 2	Chip (Dio)	4.410	1,000	270	0.08	(mg) I otal	Jie Attach	% of 10tal weight	1.35
Gold	7440-21-3	Wire Bond	0.640	0.276	6 400	02001	Acrulate resins Proprietary	Trado Socrat	10	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4 440	1 913	44 400		Treated silica	Trade Secret	2	
	1110010	TOTALS:	100.000	43.080	1.000.000	Hete	rocyclic organic compound	Trade Secret	2	
	0 04308	a Total Mass			, ,			Total	100.00	1
This semiconductor device and its homogenous materials co Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified vi	mply with EU Directi a internal design con	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	1.90	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	4.41
If a chemical substance is absent from the list above, the cher Technology Incorporated's knowledge and belief as of the dat chemical substance, if any, is not below the threshold of regu	mical substance is N e of this document, f latory concern for ar	OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidable by regulatory scheme world-wide.	e and, to the b le impurity cor	est of Microch centration of	ip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flar http://ul.com/global/eng/pages/offerings/industries/chemicals	nmability standard fo /plastics/	or plastics. You can access the UL iQTM family of databa	ses to obtain a	test report a	t	0.28	(mg) Total	Wire Bond	% of Total Weight	0.64
The protective "tubes" in which the specific product is shippe box and certain "reels" may be made from PVC plastic.	ed are made from po	lyvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information i devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this form material suppliers. Supplier information is often protected fro raw material suppliers. Information is provided only as estima These estimates do not include trace levels of dopants, metal	in this form concerni to the best of its kno because it has been m disclosure as trad ates of the average w s, and non-metal ma	ing substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe le secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ety Data Sheets vided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by ntract assemi xic metals co	ductor ated cannot raw blers and mponents.			Total	100.00	1
Microchip Technology Incorporated does not provide any war product warranties provided by Microchip Technology Incorp in Microchip's quotations, sales order acknowledgement, and	ranty, express or im orated and its subsic invoices.	plied, with respect to the information provided in this de liaries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	1.91	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	4.44
Microchip disclaims any duty to notify users of updates or ch otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	anges to Material Con users' reliance on th products.	ntent Declarations and shall not be liable for any damage le information in Material Content Declarations (MCD) or	es, direct or ind independent th	lirect, conseq iird party test	uential or reports		Tin	7440-31-5	100.00	
							<u></u>	Total	100.00	J
						43.080		Total		100.000

MICROCHIP Semiconductor Device	Semiconductor Device Type: MQ 20 (Lead) QFN 5x5x0.9mm (P8) Basic Substance CAS Number Sub-Component				Alloy: u)		ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3		
Pagia Subatanga		"Contained In"	% Total Weight	malaart		35.52	(mg) Total	Mold Compound	% ot Total Weight	52.91
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ррт	EME-			_	1
Silica, fused	60676-86-0	Mold Compound	47.619	31.967	476,190	G770HCD	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.566	1.723	25,661	Epox	y 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
01	7440.00.4				0.045	EFTEC64T +				
Silver	7440-22-4	Lead Frame	0.692	0.464	6,915	Ag	Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.065	0.044	653		lin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.091	0.061	908		Silver	7440-22-4	1.91	
Silver Acculate regine Proprietany	Trade Secret	Die Attach	0.226	0.946	14,110		Zinc	7440-00-0	0.18	
Activitie resilies	Trade Secret	Die Attach	0.320	0.219	3,200		Chiomuni	7440-47-3	0.20	4
Heteropyclic organic compound	Trade Secret	Die Attach	0.036	0.024	302	4.00	() T	I otal	100.00	4.04
	7440.04.0	Die Attdch Obie (Die)	0.030	0.024	302	1.22	(mg) Total	Die Attach	% of i otal weight	1.81
Silicon	7440-21-3	Chip (Die)	4.160	2.793	41,600	82001	Silver	7440-22-4	/8	
Gold	7440-57-5	Wire Bond	0.540	0.363	5,400		Acrylate resins Proprietary	Trade Secret	18	
lin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	2.8/3	42,800	11-4-1	I reated silica	Trade Secret	2	
		TOTALS:	100.000	67.130	1,000,000	Heter	rocyclic organic compound	Trade Secret	2 100.00	
	0.06713	g Total Mass						l otal	100.00	
This semiconductor device and its homogenous materials Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directiv	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	2.79	Total (mg)	Chip (Die)	% of Total Weight	4.16
Compliance with the above EU Directives has been verified	l via internal design cont	rols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the or Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of re	hemical substance is NC date of this document, tl egulatory concern for an	OT an intentional ingredient in the semiconductor devic nere is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the be le impurity cor	est of Microch acentration of	nip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 http://ul.com/global/eng/pages/offerings/industries/chemic	flammability standard fo als/plastics/	r plastics. You can access the UL iQTM family of databa	ises to obtain a	i test report a	t	0.36	(mg) Total	Wire Bond	% of Total Weight	0.54
The protective "tubes" in which the specific product is shi box and certain "reels" may be made from PVC plastic.	pped are made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
								Total	100.00	
Microchip Technology Incorporated believes the informati devices in their original packing materials is true and corru guarantee the completeness and accuracy of data in this for material suppliers. Supplier information is often protected raw material suppliers. Information is provided only as est These estimates do not include trace levels of dopants, mo	on in this form concernin ect to the best of its know orm because it has been from disclosure as trade imates of the average we stals, and non-metal mat	Ig substances restricted by RoHS in Microchip Technol vledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe secrets and some information may not have been prov eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technolo ety Data Sheets vided by subco d significant to e finished parts	ed's semicon ogy Incorpora provided by ntract assem oxic metals co	iductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Inco in Microchip's quotations, sales order acknowledgement, a	warranty, express or imp orporated and its subsid and invoices.	lied, with respect to the information provided in this de aries are contained in Microchip's standard terms and o	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	2.87	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	4.28
Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of (SGS) or of this Certificate of Compliance for semiconduct	changes to Material Con the users' reliance on the or products.	tent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or ind independent th	direct, consect nird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	
						67 130				100 000

Description of the first of the second of t			Termination Base Alloy: Copper Alloy (Cu)				Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				
LakeLakeJust of LakeJust of LakeImplify </th <th>Pasia Substance</th> <th></th> <th>"Contained In"</th> <th>% Total Weight</th> <th>malaart</th> <th></th> <th>52.76</th> <th>(mg) Total</th> <th>Mold Compound</th> <th>%ot Total Weight</th> <th>51.93</th>	Pasia Substance		"Contained In"	% Total Weight	malaart		52.76	(mg) Total	Mold Compound	%ot Total Weight	51.93
Sites Instruction Operating 45.00 Mode Compound 45.18 25.48 47.88 47.89 47.89 47.80 47.8	Basic Substance	CAS Number	Sub-Component	weight	ing/part	ppin	EME-				
$ \frac{1}{10^{10} \text{ Correl} Resin (MLP = 300(135.6)}{10^{10} \text{ Correl} Resin (MLP = 300(135.6))}{10^{10} \text{ Correl} Resin (MLP = 300(135.6$	Silica, fused	60676-86-0	Mold Compound	46.737	47.485	467,370	G770HCD	Silica, fused	60676-86-0	90.00	
Phenotic Ren Topic Source Media Compound 21.818 2.62.168 Phenotic Ren Topic Source 4.05 1000 Compound 1.944 2.64.164 1.944	Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2.559	25,186	Epox	y Resin (NLP # 500-033-5)	Trade Secret	4.85	
Carbon Black 133.844 Multi Compound 0.158 1.568 Carbon Black 0.033.644 0.00 10 7446 524 Load Frame 0.007 0.027 77 8.17 Load Frame 0.017 0.027 77 8.17 Load Frame 0.017 0.027 77 1.017 1.018 1.018 0.018 0.017 0.02 1.017 1.018 0.018 0.018 0.017 0.017 0.017 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.011 0.016 0.014 0.015 0.011 0.016 0.011 0.016 0.011 0.016 0.011 0.016	Phenolic Resin	Trade Secret	Mold Compound	2.519	2.559	25,186		Phenolic Resin	Trade Secret	4.85	
Log prime Hole Status Jobs	Carbon Black	1333-86-4	Mold Compound	0.156	0.158	1,558		Carbon Black	1333-86-4	0.30	
$\frac{10}{100} + \frac{1000}{100} + 1000$	Copper	7440-50-8	Lead Frame	37.885	38.491	378,847			Total	100.00	
Sher 7449:24 Lad Finne 0.741 0.753 7.400 Pice III Specific III Copper 7440:24 Data According 7440:47:3 Lead Finne 0.007 0.009 702 1	Tin	7440-31-5	Lead Frame	0.097	0.099	972	39.51	(mg) Total	Lead Frame	% of Total Weight	38.89
State 1/44/24 Load Finitian 0.1/20 1/200 1/200 1/200 1/200 1/200 Chronic minin 7/44/24 Load Finitian 0.1/20	0"	7440.00.4		0.744	0.750	7 400	EFTEC64T +				
Optimize 7440-27-4 Logd Famos 0.0/07 <t< td=""><td>Silver</td><td>7440-22-4</td><td>Lead Frame</td><td>0.741</td><td>0.753</td><td>7,409</td><td>Ag</td><td>Copper</td><td>7440-50-8</td><td>97.42</td><td></td></t<>	Silver	7440-22-4	Lead Frame	0.741	0.753	7,409	Ag	Copper	7440-50-8	97.42	
$\frac{ }{ $	ZINC	7440-66-6	Lead Frame	0.070	0.071	700	-	Lin	7440-31-5	0.25	
Acytem values Deportedation Total Scient Die Atlach 0.016 0.016 0.011 1016 Die Atlach 0.011 1016 Die Atlach 0.011 0.011 106 Die Atlach 0.011 0.011 106 0.44 most of the atlach 0.011 106 0.44 most of the atlach 0.011 0.011 106 0.44 most of the atlach % of the atla % of the atlach % of the atl	Chromium	7440-47-3	Lead Frame	0.097	0.099	972	-	Silver	7440-22-4	1.91	
Notice Directed state Directed state<	Acrulate resins Proprietary	Trade Secret	Die Attach	0.413	0.420	4,134		Chromium	7440-00-0	0.18	
Heterocyclic organic omyound Tride Server Die Attach 0011 0.001 0.016 0.011 0.011 0.001 0.000	Treated silica	Trade Secret	Die Attach	0.033	0.037	106		Chioman	7440-47-3 Total	100.00	
District	Heterocyclic organic compound	Trade Secret	Die Attach	0.011	0.011	100	0.54	(mg) Total	Die Attech	% of Total Weight	0.52
Otodi 1/440.5/3 Wite Boodi 0.830 0.930	Silicon	7440.21.2	Chin (Dia)	3.200	0.011	22,000	0.54	(mg) Totai	Jie Attach	% of Total Weight	0.53
Unit Production Productin Productin <td>Silicon</td> <td>7440-21-3</td> <td>Chip (Die)</td> <td>3.290</td> <td>3.343</td> <td>32,900</td> <td>82001</td> <td>Silver</td> <td>7440-22-4 Trada Casast</td> <td>18</td> <td></td>	Silicon	7440-21-3	Chip (Die)	3.290	3.343	32,900	82001	Silver	7440-22-4 Trada Casast	18	
Int International state of the second st	Gold	7440-37-5	Wile Bolid	0.950	0.905	9,300		Tracted cilico	Trade Secret	10	
Interview		7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100 000	101 600	44,100		atoropulio organio compou	Trade Secret	2	
1010 bg 1 otal Mass 1000 1000 g		0.4040	TOTALS:	100.000	101.000	1,000,000	п [.]	eterocyclic organic compou	Tatel	2	
hemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme work-wide. Isolding 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 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 tuter box and certain "reels" may be made from PVC plastic. Iticrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor revices 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 semblers and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by subcontracts semblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information any not have been provided by subcontracts semblers and raw material suppliers. Information is often protected from disclosure as trade secrets and some information provided in this declaration. The exclusive, limited forduct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are torivide in Microchip's quotations, sales order acknowledgement, and invoices. Iicrochip disclaims any duty to notify users of updates or changes to Material Content Declarations in Material Content Declarations (MCD) or independent third party test provide (SGS) or of this Certificate of Compliance for semiconductor products. Total 100.00	a chemical substance is absent from the list above, the cl echnology Incorporated's knowledge and belief as of the	hemical substance is NOT a date of this document, ther	an intentional ingredient in the semiconductor d e is no credible reason to believe that the unavo	evice and, to tl idable impurity	ne best of Micro concentration	ochip n of the		Doped Sillour	Total	100.00	l
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 puter box and certain "reels" may be made from PVC plastic. Alcrochip 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 by subcontract anon guarante the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic sufficient toxic. Alcrochip Technology Incorporated does not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Alcrochip 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 are are used to not include trace levels of dopants, metals, and non-metal materials contained in Microchip's standard terms and conditions of sale. These are are used to not include trace levels of dopants, metals and in Nicrochip's standard terms and conditions of sale. These are are used to not include trace levels 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 Tin 7440-31-5 100.00 Total 100.0	hemical substance, if any, is not below the threshold of re folding compounds used by Microchip meet the UL94 V0 f /ttp://ul.com/global/eng/pages/offerings/industries/chemic:	gulatory concern for any re lammability standard for p als/plastics/	egulatory scheme world-wide. lastics. You can access the UL iQTM family of d	atabases to ob	tain a test repo	ort at	0.97	(mg) Total	Wire Bond	% of Total Weight	0.95
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 semiconductor arm material suppliers. 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 estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. These estimates do not include trace levels of dopants, metals, and non-metal materials contained in Microchip's standard terms and conditions of sale. These are rorovided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are rorovided in Microchip's quotations, sales order acknowledgement, and invoices. Microchip to notify users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test eports (SGS) or of this Certificate of Compliance for semiconductor products. Total 100.00	he protective "tubes" in which the specific product is ship outer box and certain "reels" may be made from PVC plast	ped are made from polyvir ic.	nyl chloride (PVC) plastic. "Window envelopes"	used to hold th	e packing slip	on the		Doped Gold	7440-57-5	100	
Alterochip 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. Alterochip 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 rother users' reliance on the information in Material Content Declarations (MCD) or independent third party test eports (SGS) or of this Certificate of Compliance for semiconductor products.	Acrochip Technology Incorporated believes the informatic	on in this form concerning s	substances restricted by RoHS in Microchip Tec	hnology Incor	orated's semi	conductor		<u></u>	Total	100.00	L
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 eports (SGS) or of this Certificate of Compliance for semiconductor products.	levices in their original packing materials is true and corre annot guarantee the completeness and accuracy of data i aw material suppliers. Supplier information is often protec ssemblers and raw material suppliers. Information is prov tetals components. These estimates do not include trace l	n this form because it has I ted from disclosure as trac ided only as estimates of th evels of dopants, metals, a	dge and belief, as of the date listed in this form. seen compiled based on the ranges provided in le secrets and some information may not have b he average weight of these parts and the averag nd non-metal materials contained within silicon	Microchip Tec Material Safety een provided I e weight of ant devices (silico	hnology Incor Data Sheets by subcontract icipated signif n IC) in the fin	icant toxic ished parts.					
Total 100.00	levices in their original packing materials is true and corre annot guarantee the completeness and accuracy of data i aw material suppliers. Supplier information is often protec ssemblers and raw material suppliers. Information is prov netals components. These estimates do not include trace I licrochip Technology Incorporated does not provide any w roduct warranties provided by Microchip Technology Inco rovided in Microchip's quotations, sales order acknowled	the form of the set of its knowledge of the secanse it has in the form disclosure as tractided only as estimates of the evels of dopants, metals, a varranty, express or implier rporated and its subsidiari gement, and invoices.	dge and belief, as of the date listed in this form. seen compiled based on the ranges provided in le secrets and some information may not have b he average weight of these parts and the averag nd non-metal materials contained within silicon d, with respect to the information provided in th es are contained in Microchip's standard terms	Microchip Tec Material Safety een provided I e weight of ant devices (silico is declaration. and conditions	hnology Incor Data Sheets oy subcontract icipated signif n IC) in the fin The exclusive of sale. These	icant toxic ished parts. limited are	4.48	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	%of Total Weight	4.41
	levices in their original packing materials is true and corre annot guarantee the completeness and accuracy of data i aw material suppliers. Supplier information is often protec ssemblers and raw material suppliers. Information is prov tetals components. These estimates do not include trace I licrochip Technology Incorporated does not provide any v roduct warranties provided by Microchip Technology Inco rovided in Microchip's quotations, sales order acknowledg licrochip disclaims any duty to notify users of updates or o totherwise, suffered by users or third parties as a result o aports (SGS) or of this Certificate of Compliance for semic	In this form because it has i ted from disclosure as trac- ided only as estimates of ti levels of dopants, metals, a varranty, express or implie rporated and its subsidiari gement, and invoices. changes to Material Conter f the users' reliance on the onductor products.	dge and belief, as of the date listed in this form. been compiled based on the ranges provided in le sccrets and some information may not have b he average weight of these parts and the averag and non-metal materials contained within silicon d, with respect to the information provided in th es are contained in Microchip's standard terms and Declarations and shall not be liable for any da information in Material Content Declarations (N	Microchip Tee Material Safety e weight of ant devices (silico is declaration. and conditions mages, direct ICD) or indepe	hnology incorp Data Sheets j y subcontract icipated signif n IC) in the fin The exclusive, of sale. These or indirect, con indent third par	orated provided by icant toxic ished parts. limited a are nsequential ty test	4.48	(mg) Total Tin	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	%of Total Weight	4.41
Semiconductor Device Type: ML or MM 28 (Lead) QFN-S 6x6mm (M2/MB) "Contained In" Contained In"				ation Base A oper Alloy (C	Alloy: u)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3	
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Dania Sukatanan		"Contained In"	% Total	m a la ant		52.77	(mg) Total	Mold Compound	% ot Total Weight	51.94	
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ррт	EME-			-	p	
Silica, fused	60676-86-0	Mold Compound	46.746	47.494	467,460	G770HCD	Silica, fused	60676-86-0	90.00		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2.559	25,191	Epox	y 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	194+AG	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	
						CRM-					
Butyl cellosolve acetate	112-07-2	Die Attach	0.004	0.004	42	1076DJ	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-	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		
	0 1016	a Total Mass						Total	100.00	,	
This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directi	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	3.34	Total (mg)	Chip (Die)	% of Total Weight	3.29	
Compliance with the above EU Directives has been verified via inte	ernal design con	ntrols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100		
If a chemical substance is absent from the list above, the chemica Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulator	l substance is N this document, t y concern for ar	OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidabl ny regulatory scheme world-wide.	e and, to the be le impurity con	est of Microch centration of	nip the			Total	100.00	J	
Molding compounds used by Microchip meet the UL94 V0 flammal http://ul.com/global/eng/pages/offerings/industries/chemicals/plas	oility standard fo tics/	or plastics. You can access the UL iQTM family of databa	ses to obtain a	test report a	t	0.97	(mg) Total	Wire Bond	% of Total Weight	0.95	
The protective "tubes" in which the specific product is shipped are box and certain "reels" may be made from PVC plastic.	e made from po	lyvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100		
box and certain "reels" may be made from PVC plastic. 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 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 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 product warranties provided by Microchip Technology Incorporate in Microchip's quotations, sales order acknowledgement, and invo	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 provided rochip's quotations, sales order acknowledgement, and invoices.								% of Total Weight	4.41	
Microchip disclaims any duty to notify users of updates or change otherwise, suffered by users or third parties as a result of the user (SGS) or of this Certificate of Compliance for semiconductor prod	s to Material Cons' s' reliance on th ucts.	ntent Declarations and shall not be liable for any damage the information in Material Content Declarations (MCD) or	es, direct or inc independent th	lirect, consec ird party test	uential or reports		Tin	7440-31-5	100.00		
								Total	100.00	-	
						101.600				100.000	

Semiconductor Device Type: ML 40 (Lead) QFN 6x6x0.9mm (S3) "Contained In"		QFN 6x6x0.9mm (S3)	Termiı Co	nation Base A pper Alloy (C	Alloy: u)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
[,	"Contained In"	% Total							L
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	EME-G770HCD	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.184	2.206	21,844	Epox	/ Resin (NLP # 500-033-5)	Trade Secret	4.85	I
Phenolic Resin	Trade Secret	Mold Compound	2.184	2.206	21,844	_	Phenolic Resin	Trade Secret	4.85	4
Carbon Black	1333-86-4	Mold Compound	0.135	0.136	1,351	_	Carbon Black	1333-86-4	0.30	1
Copper	7440-50-8	Lead Frame	46.925	47.394	469,248			Total	100.00	
lin	7440-31-5	Lead Frame	0.120	0.122	1,204	48.65	(mg) Total	Lead Frame	% of Total Weight	48.17
Silver	7440.00.4	Lood Frame	0.019	0.007	0.176	EFTEC64T + Ag	0	7440 50 0	07.40	
Zinc	7440-22-4	Lead Frame	0.918	0.927	9,176	- Ĭ	Copper	7440-50-8	97.42	1
Chromium	7440-00-0	Lead Frame	0.087	0.088	1 20/	-	Silvor	7440-31-5	1.01	
Silver	7440-22-4	Die Attach	0.226	0.228	2 262		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.052	0.053	522		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.006	0.006	58	-		Total	100.00	ן ה
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	8200T	Silver	7440-22-4	78	1
Gold	7440-57-5	Wire Bond	0.860	0.869	8,600		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.920	2.949	29,200		Treated silica	Trade Secret	2	
		TOTALS:	100.000	101.000	1,000,000	Heter	ocyclic organic compound	Trade Secret	2	
	0.1010	g Total Mass						Total	100.00	, -
Compliance with the above EU Directives has been verified If a chemical substance is absent from the list above, the c Technology Incorporated's knowledge and belief as of the ⊨ chemical substance, if any, is not below the threshold of re	via internal design cont hemical substance is NO date of this document, tl gulatory concern for an	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidabl y regulatory scheme world-wide.	and, to the b e impurity cor	est of Microch ncentration of	lip the		Doped Silicon	7440-21-3 Total	100 100.00	
Molding compounds used by Microchip meet the UL94 V0 f http://ul.com/global/eng/pages/offerings/industries/chemic	lammability standard fo als/plastics/	r plastics. You can access the UL iQTM family of databas	ses to obtain a	a test report a	t	0.87	(mg) Total	Wire Bond	% of Total Weight	0.86
The protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic.	oped are made from poly	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the informatio devices in their original packing materials is true and corre guarantee the completeness and accuracy of data in this fo material suppliers. Supplier information is often protected raw material suppliers. Information is provided only as esti These estimates do not include trace levels of dopants, me			Total	100.00	•					
Microchip Technology Incorporated does not provide any v product warranties provided by Microchip Technology Inco in Microchip's quotations, sales order acknowledgement, a	crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited iduct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided Microchip's quotations, sales order acknowledgement, and invoices.							Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	: 2.92
	ale and an a factor of a local state of the second state of the se		e direct or in	direct concor	wontial or	1				
Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of t (SGS) or of this Certificate of Compliance for semiconducto	changes to Material Con he users' reliance on the or products.	itent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	ndependent t	hird party test	reports		Tin	7440-31-5	100.00	

	Semiconductor Device Type: ML 44 (Lead) QFN 8x8x0.9 mm (T3 / TR) COntained In" State Compared			nation Base A pper Alloy (C	Nloy: u)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
	PC. III ++ (Leau)	"Contained In"	% Total	1						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	75.12	(mg) Total	Mold Compound	% ot Total Weight	39.87
	00070.00.0	Mald Operational	05 000	07.004	050.000	EME-	Silica, fused	60676-86-0	90.00	
Silica, tused	60676-86-0	Mold Compound	35.883	67.604	358,830	G770HCD	Booin (NILD # 500.022.5)	Trada Coarat	4.95	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.934	3.643	19,337	Epo	xy Resin (NLP # 500-033-5)	Trade Secret	4.85	
Carbon Black	1222 06 4	Mold Compound	0.120	0.225	1 1 1 0 6		FileHolic Resili	1222 96 4	4.65	
Calbon Black	7440 50 9	Nibid Compound	47.002	0.225	1,190		Calboli black	1333-00-4 T-4-1	0.30	l l
Copper	7440-50-8	Lead Frame	47.903	90.248	479,025			l otal	100.00	
Ifon	7439-89-6	Lead Frame	1.178	2.220	11,783	94.46	(mg) Total	Lead Frame	% of Total Weight	50.14
Silver	7440-22-4	Lead Frame	0.955	1.800	9,552	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.063	0.118	627		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.041	0.078	414		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.186	2.234	11,856		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.274	0.515	2,736		Phosphorous	7723-14-0	0.08	
Treated silica	Trade Secret	Die Attach	0.030	0.057	304			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.030	0.057	304	2.86	(mg) Total	Die Attach	% of Total Weight	1.52
Silicon	7440-21-3	Chip (Die)	4,280	8.064	42,800	8200T	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.480	0.904	4 800	02001	Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / appealed at 150°C for 1 hour	3 710	6.990	37 100		Treated silica	Trade Secret	2	
1111	7440-51-5	Flating off external leads (pins) - Matter III/ annealed at 150 C for Thou	100 000	199 400	1 000 000	Hote		Trade Secret	2	
		TOTALS.	100.000	100.400	1,000,000	Hele	accyclic organic compound	Trade Secret	2	<u> </u>
	0.1884	g Total Mass						Total	100.00	
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	in internal design con	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(ROHS Recast	Directive) and	d with EU	8.06	Total (mg)	Chip (Die)	% of Total Weight	4.28
Compliance with the above Lo Directives has been vernied v	la internar design con	allois, supplier declarations, and for analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the che Technology Incorporated's knowledge and belief as of the da chemical substance, if any, is not below the threshold of reg	emical substance is No te of this document, t ulatory concern for an	DT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably y regulatory scheme world-wide.	e and, to the b e impurity cor	est of Microch acentration of	ip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 fla http://ul.com/global/eng/pages/offerings/industries/chemical	mmability standard fo s/plastics/	r plastics. You can access the UL iQTM family of databa	ses to obtain a	i test report at	t	0.90	(mg) Total	Wire Bond	% of Total Weight	0.48
The protective "tubes" in which the specific product is shipp box and certain "reels" may be made from PVC plastic.	ed are made from pol	vvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
							l	Total	100.00	u
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correc- guarantee the completeness and accuracy of data in this forr material suppliers. Supplier information is often protected fr raw material suppliers. Information is provided only as estim These estimates do not include trace levels of dopants, meta	in this form concerning to the best of its known because it has been own disclosure as trade ates of the average we ls, and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe s secrets and some information may not have been prov eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol- ity Data Sheets rided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by intract assemi oxic metals co	ductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any wa product warranties provided by Microchip Technology Incor in Microchip's quotations, sales order acknowledgement, an	rranty, express or imp porated and its subsid I invoices.	lied, with respect to the information provided in this de laries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	6.99	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.71
Microchip disclaims any duty to notify users of updates or cl otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	anges to Material Cor users' reliance on the products.	tent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or ind independent th	direct, conseq hird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100 00	
								Tetai	. 50.00	

Semiconductor Device Type: MR 64 (Lead) QFN 9x9x0.9mm (R4) Contained In"		QFN 9x9x0.9mm (R4)	Termir Coj	ation Base A oper Alloy (C	Nloy: u)		s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3		
	.) po : int o : (2000)	"Contained In"	% Total	1						
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	10.41	(mg) Total	Mold Compound	% ot Total Weight	4.48
	00070.00.0	Mald Operational	4 000	0.070	40.000	EME-	Silica, fused	60676-86-0	90.00	
Silica, luseu	00070-00-0	Mold Compound	4.032	9.370	40,320	GIIONCD	Enougy Booin	Trada Coarat	4.95	
Epoxy Resin	Trade Secret	Mold Compound	0.217	0.505	2,173	-	Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	1222 PC 4	Mold Compound	0.217	0.505	2,173	-	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-60-4		0.013	0.031	134	-	Carbon Black	1333-80-4	0.30	
Copper	7440-50-8	Lead Frame	40.914	95.085	409,143			Total	100.00	
lin	7440-31-5	Lead Frame	0.105	0.244	1,050	97.61	(mg) Total	Lead Frame	% of Total Weight	42
						EFTEC64T +				
Silver	7440-22-4	Lead Frame	0.800	1.859	8,001	Ag	Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.076	0.176	756		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.105	0.244	1,050		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.888	4.387	18,876		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.436	1.012	4,356		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.048	0.112	484			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.048	0.112	484	5.62	(mg) Total	Die Attach	% of Total Weight	2.42
Silicon	7440-21-3	Chin (Die)	6 000	13 944	60,000	8200T	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.970	2 254	9 700		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (nins) - Matte Tin / annealed at 150°C for 1 hour	44 130	102 558	441 300		Treated silica	Trade Secret	2	
	1110 01 0	TOTALS'	100.000	232 400	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	
	0 2224	Total Mass			.,,		objelle elgante competitio	Total	100.00	
I his semiconductor device and its homogenous materials Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified	via internal design conti	ols, supplier declarations, and /or analytical test data.	ROHS Recast	Directive) and	d with EU	13.94	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	6
f a chemical substance is absent from the list above, the c Fechnology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of re	hemical substance is NO date of this document, th gulatory concern for any	T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide.	and, to the be impurity con	est of Microch centration of	ip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 f http://ul.com/global/eng/pages/offerings/industries/chemic	lammability standard for als/plastics/	plastics. You can access the UL iQTM family of databas	es to obtain a	test report a	t	2.25	(mg) Total	Wire Bond	% of Total Weight	0.97
The protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic.	pped are made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used t	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Vicrochip Technology Incorporated believes the informatic devices in their original packing materials is true and corre guarantee the completeness and accuracy of data in this fo material suppliers. Supplier information is often protected raw material suppliers. Information is provided only as est These estimates do not include trace levels of dopants, me			Total	100.00						
Vicrochip Technology Incorporated does not provide any v product warranties provided by Microchip Technology Inco in Microchip's quotations, sales order acknowledgement, a Microchip disclaims any duty to polify users of undates or	rochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited duct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided licrochip's quotations, sales order acknowledgement, and invoices.							Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	44.13
otherwise, suffered by users or third parties as a result of t (SGS) or of this Certificate of Compliance for semiconduct	to material Cont he users' reliance on the or products.	information in Material Content Declarations (MCD) or in	s, direct of ind ndependent th	hird party test	reports		Tin	7440-31-5	100.00	
								Iotal	100.00	
						232,400				100.000

Semiconductor Device Type: MJ 24 (Lead) QFN 4x4mm (J3)	Term C	ination Base opper Alloy (C	Alloy: Cu)		JEDEC 97 Product Marking and/or Pkg. Labeling e3			
"Contained In"	% Total			21.53	(mg) Total	Mold Compound	% ot Total Weight	48.78
Basic Substance CAS Number Sub-Component	weight	mg/part	ppm	EME.	1		-	
Silica. fused 60676-86-0 Mold Compound	43.902	19.374	439.020	G770HCD	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5) Trade Secret Mold Compound	2.366	1.044	23,658	Epo	xy Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin Trade Secret Mold Compound	2.366	1.044	23,658	· ·	Phenolic Resin	Trade Secret	4.85	
Carbon Black 1333-86-4 Mold Compound	0.146	0.065	1,463		Carbon Black	1333-86-4	0.30	
Copper 7440-50-8 Lead Frame	37,193	16.413	371.930	1	<u>.</u>	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
				EFTEC64T	(, e e : e e e e e e e e e e e e e e e e	
Silver 7440-22-4 Lead Frame	0.727	0.321	7.273	+ 40	Copper	7440-50-8	97.42	
Zinc 7440-66-6 Lead Frame	0.069	0.030	687		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	
Activitate resins Proprietary Trade Secret Die Attach	0.223	0.098	2 232		Chromium	7440-00-0	0.10	
Treated silica Trade Secret Die Attach	0.025	0.030	248	-	Onoman	Total	100.00	
Heterocyclic organic compound Trade Secret Die Attach	0.025	0.011	248	0.55	(mg) Total	Die Attech	9/ of Total Waight	1.04
Cilian Cilian Zato 21.2 Chia (Dia)	6.770	2,000	67,700	0.55	(IIIg) Total			1.24
Silicoli (440-21-5) Chip (Die)	0.770	2.900	7,700	82001	Acrulate regine Droprietory	7440-22-4	/8	
Gold 7440-37-5 Wile Bold	0.750	0.331	7,500	-	Acrylate resins Prophetary	Trade Secret	18	
110 /440-31-5 Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	hour 4.280	1.889	42,800		I reated silica	I rade Secret	2	
101	ALS: 100.000	44.130	1,000,000	Hete	rocyclic organic compound	I rade Secret	2	
0.0441 g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011// Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	5/EU (RoHS Recas	st Directive) an	d with EU	2.99	Total (mg)	Chip (Die)	% of Total Weight	6.77
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test	lata.					7440-21-3	100	
f a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor fechnology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unav- chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.	device and, to the bidable impurity co	best of Microc oncentration o	hip f the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of d http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/	atabases to obtain	a test report a	it	0.33	(mg) Total	Wire Bond	% of Total Weight	0.75
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" pox and certain "reels" may be made from PVC plastic.	used to hold the p	acking slip on	the outer		JGPSSI (D02)	7440-57-5	100	
dicrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Te- 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 yuarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Materia naterial suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have beer aw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC)			Total	100.00	-			
Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in the product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms n Microchip's quotations, sales order acknowledgement, and invoices.	is declaration. The and conditions of	e exclusive, lin sale. These ar	nited e provided	1.89	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.28
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any da otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MC SGS) or of this Certificate of Compliance for semiconductor products.	mages, direct or i D) or independent	ndirect, conse third party tes	quential or t reports			7440-31-5	100.00	
						Total	100.00	,
				44 130				100 000

Міскоснір	Semiconductor Device Type: QU6E 06 (Lead) UQFN 3x1.6x0.55mm (QU)			nation Base opper Alloy (0	Alloy: Cu)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Devic	e Type: QU6E 06 (Le	ad) UQFN 3x1.6x0.55mm (QU)								es
Pacie Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	malpart		1.36	(mg) Total	Mold Compound	% ot Total Weight	20.25
Silica fused	60676-86-0	Mold Compound	18 225	1 221	182 250	G770HT	Silica fused	60676-86-0	90.00	7
Epoxy Resin	Trade Secret	Mold Compound	0.982	0.066	9.821	3//0111	Enoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	0.982	0.000	9.821		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.061	0.004	608		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	69.935	4.686	699.355			Total	100.00	Ш
Nickel	7440-02-0	Lead Frame	1 865	0.125	18 651	4 92	(ma) Total	Lead Frame	% of Total Weight	73.43
Silicon	7440-21-3	Lead Frame	0.330	0.022	3 304	C7025 + Ag	Copper	7440-50-8	95.24	10.40
Magnesium	7439-95-4	Lead Frame	0.000	0.005	734	1 0/020 + Ag	Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	1 226	0.082	12 255		Silicon	7440-21-3	0.45	
Ag	7440-22-4	Die Attach	1.220	0.002	17 100		Magnesium	7439-95-4	0.40	
Enoxy resin	Trade secret	Die Attach	0.342	0.023	3 420		Silver	7435-55-4	1.67	
Aliphatic anhydride	Trade secret	Die Attach	0.114	0.020	1 140		Oliver	Total	100.00	<u>1</u>
2-Butoxyetbyl acetate	112-07-2	Die Attach	0.057	0.000	570	0.15	(mg) Total	Die Attech	% of Total Waight	2.29
Delumeria meterial		Die Attach	0.057	0.004	570	0.15	(ing) iotai	Die Attach		2.20
Polymenc material	1202.00.0	Chip (Dia)	0.057	0.004	21,200	8352L	Ag	7440-22-4	75.00	•
Silicon Deped Cold	7440 57 5	Crip (Die)	2.120	0.142	21,200	-	Aliphotic ophydrido	Trade secret	15.00	•
Doped Gold	7440-57-5		0.540	0.036	5,400	-	Aliphatic annyolide	11ade secret	5.00	•
	7440-31-5	Plating on external leads (pins) - Matter I in / annealed at 150°C for 1 hour	1.300	6.700	13,800	-	2-Butoxyetriyi acetate	112-07-2 Teads access	2.50	•
		TUTALS:	100.000	6.700	1,000,000		Polymeric material	Trade secret	3	<u>J</u>
	0.0067	g Total Mass						Total	100.00	
This semiconductor device and its homogenous material Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive	s comply with EU Directive).	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recas	st Directive) a	nd with EU	0.14	(mg) Total	Chip (Die)	% of Total Weight	2.12
Compliance with the above EU Directives has been verified	ed via internal design contr	ols, supplier declarations, and /or analytical test data.				Doped GaAs	GaAs	1303-00-0	100	
If a chemical substance is absent from the list above, the	chemical substance is NO	T an intentional ingredient in the semiconductor device	and to the	best of Micro	chin		L	Total	100.00	<u>-</u>
Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of	e date of this document, the regulatory concern for any	ere is no credible reason to believe that the unavoidabl regulatory scheme world-wide.	e impurity co	oncentration	of the					
Molding compounds used by Microchip meet the UL94 V0 http://ul.com/global/eng/pages/offerings/industries/chem) flammability standard for icals/plastics/	plastics. You can access the UL iQTM family of databas	ses to obtain	a test report	at	0.04	(mg) Total	Wire Bond	% of Total Weight	0.54
The protective "tubes" in which the specific product is sh box and certain "reels" may be made from PVC plastic.	ipped are made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used	to hold the p	acking slip o	n the outer		Doped Gold	7440-57-5	100.00	
dicrochip 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 sannot 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 aw 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.								Total	100.00	-
Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology In provided in Microchip's quotations, sales order acknowle	varranty, express or implicorporated and its subsidia dgement, and invoices.	ied, with respect to the information provided in this dec aries are contained in Microchip's standard terms and c	claration. The conditions of	e exclusive, li sale. These a	mited are	0.09	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.38
Microchip disclaims any duty to notify users of updates o otherwise, suffered by users or third parties as a result of (SGS) or of this Certificate of Compliance for semiconduc	r changes to Material Cont the users' reliance on the tor products.	ent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or i	es, direct or in independent	ndirect, conse third party te	equential or st reports	r	Tin	7440-31-5	100.00	
						L		Total	100.00	
						6.700)			100.000

MICROCHIP Semiconductor Device Type:	QUBE 12 (Lea	d) UQFN 2x2x0.55mm (QM)	Termination Base Alloy: Copper Alloy (Cu)				JEDEC 97 Product Marking and/or Pkg. Labeling e3			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	EME G770HT	Silica, fused	60676-86-0	90.00	1
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		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	C7025+Ag	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	I rade secret	Die Attach	0.564	0.029	5,640		Silver	7440-22-4	1.67	IJ
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
lin	7440-31-5 F	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.140	0.109	21,400	8352L	Silver	7440-22-4	80.00	
	0.0054	TOTALS:	100.000	5.100	1,000,000		Epoxy Resin	Trade secret	20.00	IJ
	0.0051 g	l otal Mass						I otai	100.00	
This semiconductor device and its homogenous materials comply v Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	vith EU Directive 200	2/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Di	rective) and	with EU	0.73	(mg) Total	Chip (Die)	% of Total Weight	14.37
Compliance with the above EU Directives has been verified via inter	nal design controls,	supplier declarations, and /or analytical test data.				Doped GaAs	GaAs	1303-00-0	100	
If a chemical substance is absent from the list above, the chemical s Technology Incorporated's knowledge and belief as of the date of th substance, if any, is not below the threshold of regulatory concern f	ubstance is NOT an is document, there i or any regulatory sc	intentional ingredient in the semiconductor device an s no credible reason to believe that the unavoidable in heme world-wide.	d, to the best purity conce	of Microchip Intration of th	ne chemical			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flammabi http://ul.com/global/eng/pages/offerings/industries/chemicals/plasti	lity standard for plas cs/	stics. You can access the UL iQTM family of databases	to obtain a te	est report at		0.05	(mg) Total	Wire Bond	% of Total Weight	1.06
The protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.	made from polyviny	I chloride (PVC) plastic. "Window envelopes" used to h	old the pack	ing slip on th	e outer box		Doped Gold	7440-57-5	100.00	
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 becau suppliers. Supplier information is often protected from disclosure a suppliers. Information is provided only as estimates of the average estimates do not include trace levels of dopants, metals, and non-m	form concerning su best of its knowledg use it has been comp s trade secrets and s weight of these parts etal materials contai	bstances restricted by RoHS in Microchip Technology e and belief, as of the date listed in this form. Microchi biled based on the ranges provided in Material Safety D some information may not have been provided by sub- s and the average weight of anticipated significant toxi ined within silicon devices (silicon IC) in the finished p	Incorporated p Technolog Data Sheets p contract asse c metals com parts.	's semicond y Incorporate rovided by ra mblers and r ponents. The	uctor ed cannot w material aw material ese			Total	100.00	-
crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product irranties 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.							(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	%of Total Weight	2.14
Microchip disclaims any duty to notify users of updates or changes otherwise, suffered by users or third parties as a result of the users' (SGS) or of this Certificate of Compliance for semiconductor produc	to Material Content I reliance on the info ts.	Declarations and shall not be liable for any damages, d rmation in Material Content Declarations (MCD) or inde	lirect or indire pendent thire	ect, consequ d party test re	ential or eports		Tin	7440-31-5	100.00	
								Total	100.00	
						5.100)			100.000

MICROCHIP

Semiconductor Device Type: QUCE 16 (Lead) UQFN/XDFN 3x3x0.45mm (QR)				ation Base A oper Alloy (C	Alloy: Su)		s)	JEDEC 97 Product Marking and/or Pkg. Labeling		
Semiconductor Devic	e Type: QUCE 16 (Lead) UQ	FN/XDFN 3x3x0.45mm (QR)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	10.61	(mg) Total	Mold Compound	%ot Total Weight	51.99
Silica fused	60676-86-0	Mold Compound	46 791	9.545	467 910	EME G770HJ	Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	2.522	0.514	25.215		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.522	0.514	25,215		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.156	0.032	1,560		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	39.630	8.084	396,298		·	Total	100.00	
Nickel	7440-02-0	Lead Frame	1.057	0.216	10,569	8.49	(mg) Total	Lead Frame	% of Total Weight	41.61
Silicon	7440-21-3	Lead Frame	0.187	0.038	1.872	C7025 + Aq	Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.042	0.008	416		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.694	0.142	6,945		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.632	0.129	6,320		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.158	0.032	1,580		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.170	0.443	21,700		·	Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.490	0.100	4,900	0.16	(mg) Total	Die Attach	% of Total Weight	0.79
Tin	7440-31-5 Plating o	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	0.602	29,500	8352L	Silver	7440-22-4	80.00	
		TOTALS:	100.000	20.400	1,000,000		Epoxy Resin	Trade secret	20.00	
	0.0204 g. Tots	Mass						Total	100.00	
This semiconductor device and its homogenous materials Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2002/95/E	EC (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Di	rective) and v	with EU	0.44	(mg) Total	Chip (Die)	% of Total Weight	2.17
Compliance with the above EU Directives has been verified	l via internal design controls, suppl	ier declarations, and /or analytical test data.				Doped GaAs	Gallium arsenide	1303-00-0	100	
If a chemical substance is absent from the list above, the or Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of re	hemical substance is NOT an inten date of this document, there is no o egulatory concern for any regulator	tional ingredient in the semiconductor device an redible reason to believe that the unavoidable in y scheme world-wide.	d, to the best purity conce	of Microchip ntration of th	e			iotai	100.00	
Molding compounds used by Microchip meet the UL94 V0 http://ul.com/global/eng/pages/offerings/industries/chemic	flammability standard for plastics. ` als/plastics/	You can access the UL iQTM family of databases	to obtain a te	st report at		0.10	(mg) Total	Wire Bond	% of Total Weight	0.49
The protective "tubes" in which the specific product is shi box and certain "reels" may be made from PVC plastic.	pped are made from polyvinyl chlo	ride (PVC) plastic. "Window envelopes" used to h	nold the pack	ing slip on th	e outer		Doped Gold	7440-57-5	100.00	
Microchip Technology Incorporated believes the informati devices in their original packing materials is true and corre guarantee the completeness and accuracy of data in this fo suppliers. Supplier information is often protected from dis material suppliers. Information is provided only as estimal These estimates do not include trace levels of dopants, mo	on in this form concerning substan act to the best of its knowledge and orm because it has been compiled I closure as trade secrets and some ies of the average weight of these p stals, and non-metal materials cont	ces restricted by RoHS in Microchip Technology belief, as of the date listed in this form. Microchi pased on the ranges provided in Material Safety D information may not have been provided by sub arts and the average weight of anticipated signifi ained within silicon devices (silicon IC) in the fini	Incorporated p Technolog Data Sheets p contract asse cant toxic me ished parts.	's semicondu y Incorporate rovided by ra mblers and ra etals compon	uctor d cannot w material aw ents.					
Microchip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporate Microchip's quotations, sales order acknowledgement, and	warranty, express or implied, with r d and its subsidiaries are contained l invoices.	espect to the information provided in this declar: in Microchip's standard terms and conditions of	ation. The ex f sale. These	clusive, limite are provided	ed product in			Total	100.00	
Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of (SGS) or of this Certificate of Compliance for semiconduct	changes to Material Content Declar the users' reliance on the information or products.	ations and shall not be liable for any damages, d on in Material Content Declarations (MCD) or inde	lirect or indir	ect, conseque d party test re	ential or eports	0.60	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.95
							Tin	7440-31-5	100.00	
							· · · · · · · · · · · · · · · · · · ·	Total	100.00	

Semiconductor Device Type: Q3DE 20 (Lead) UQFN 3x3x0.55mm (QD)		Term C	ination Base opper Alloy (Alloy: (Cu)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling	
Semiconductor Device Ty	vpe: Q3DE 20 (L	ead) UQFN 3x3x0.55mm (QD)								e3
		"Contained In"	% Total			10.59	(mg) Total	Mold Compound	% of Total Waight	51 57
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	10.59	(ing) rotai	wold compound	%ot rotal weight	51.57
Silica, fused	60676-86-0	Mold Compound	46.413	9.529	464,130	EME-G770HT	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.501	0.513	25,011		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.501	0.513	25,011		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.155	0.032	1,547		Carbon Black	1333-86-4	0.30]
Copper	7440-50-8	Lead Frame	39.916	8.195	399,155			Total	100.00	
Nickel	7440-02-0	Lead Frame	1.065	0.219	10,645	8.60	(mg) Total	Lead Frame	% of Total Weight	41.91
Silver	7440-22-4	Lead Frame	0.699	0.144	6,995	C7025+ Ag	Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.189	0.039	1,886		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.042	0.009	419		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	0.656	0.135	6,560		Silicon	7440-21-3	0.45	
Epoxy Resin	I rade secret	Die Attach	0.164	0.034	1,640		Magnesium	7439-95-4	0.10	
Silicon	7440-21-3	Chip (Die)	2.180	0.448	21,800			Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.530	0.109	5,300	0.17	(mg) Total	Die Attach	% of Total Weight	0.82
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.990	0.614	29,900	8352L	Silver	7440-22-4	80.00	
		TOTALS:	100.000	20.530	1,000,000		Epoxy Resin	Trade secret	20.00]
	0.02053	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials con Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recas	t Directive) a	nd with EU	0.45	(mg) Total	Chip (Die)	% of Total Weight	2.18
Compliance with the above EU Directives has been verified via	a internal design contr	ols, supplier declarations, and /or analytical test data.				Doped Silicon	Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the cher Technology Incorporated's knowledge and belief as of the dat chemical substance, if any, is not below the threshold of regu	nical substance is NO e of this document, th latory concern for any	T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide.	and, to the t impurity co	best of Microo Incentration of	chip of the			I otai	100.00	
Molding compounds used by Microchip meet the UL94 V0 flan http://ul.com/global/eng/pages/offerings/industries/chemicals	nmability standard for /plastics/	plastics. You can access the UL iQTM family of databas	es to obtain	a test report	at	0.11	(mg) Total	Wire Bond	% of Total Weight	0.53
The protective "tubes" in which the specific product is shippe box and certain "reels" may be made from PVC plastic.	d are made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used t	o hold the p	acking slip o	n the outer		Doped Gold	7440-57-5	100.00	
Microchip Technology Incorporated believes the information i devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this form suppliers. Supplier information is often protected from disclo material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metal	ox and certain "reels" may be made from PVC plastic. licrochip 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. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw interial suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. hese estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.							Total	100.00	
Microchip Technology Incorporated does not provide any war warranties provided by Microchip Technology Incorporated ar Microchip's quotations, sales order acknowledgement, and in	rochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product rranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in rrochip's quotations, sales order acknowledgement, and invoices.							Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.99
Microchip disclaims any duty to notify users of updates or cha otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor p	rochip disclaims any duty to notify users of updates of changes to Material Content Declarations and shall not be liable for any damages, direct of indirect, consequential of 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 S) or of this Certificate of Compliance for semiconductor products.						Tin	7440-31-5	100.00	
								Total	100.00	
						20.530	I			100.000

Semiconductor Device Type: MV 28 (Lead) UQFN 4x4x0.5mm (R6)		Termi Co	nation Base A opper Alloy (C	lloy: u)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Semiconductor Device Ty	pe: MV 28 (Lead) UQ	FN 4x4x0.5mm (R6)					-			
Dania Cubatanaa	CAC Number	"Contained In" Sub Component	% Total Weight			11.99	(mg) Total	Mold Compound	% ot Total Weight	45.93
Basic Substance	CAS Number	Sub-component	weight	mg/part	ppm		Ollian friend		-	
Enow Regin (NLR # 500,022,5)	Trade Secret	Mold Compound	41.337	0.591	413,370	EME-G//UHCD	Posin (NI P # 500.022.5)	Trada Socrat	90.00	
Epoxy Resin (NLP # 500-033-5) Phenolic Resin	Trade Secret	Mold Compound	2.220	0.581	22,276	Ероху	Phenolic Resin	Trade Secret	4.00	
Carbon Black	1333-86-4	Mold Compound	0.138	0.081	1 378		Carbon Black	1333-86-4	4.00	
Carbon black	7440 50 8	Lood Frame	24.005	0.000	240.052	-	Calboli Diack	1555-60-4 Total	0.30	J
Tip	7440-30-8	Lead Frame	0.095	0.033	975	0.44	(Total	No.00	25
1111	7440-31-3	Leau Franie	0.000	0.023	875	9.14	(mg) i otai	Lead Frame	% of 1 otal weight	30
011	7440.00.4	Lood From a	0.007	0.474	0.000	EFTEC641 +	0	7449 59 9	07.40	
Silver	7440-22-4	Lead Frame	0.667	0.174	6,668	Ag	Copper	7440-50-8	97.42	
ZINC	7440-00-0	Lead Frame	0.063	0.016	630	-	1in	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.088	0.023	8/5	-	Silver	7440-22-4	1.91	
Silvei	7440-22-4	Die Attach	1.123	0.293	11,232	-	Zinc	7440-66-6	0.18	
Activiate resins Proprietary	Trade Secret	Die Allach	0.259	0.066	2,592	-	Chromium	7440-47-3	0.25	
I reated silica	Trade Secret	Die Attach	0.029	800.0	288			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.029	0.008	288	0.38	(mg) Total	Die Attach	% of Total Weight	1.44
Silicon	7440-21-3	Chip (Die)	8.700	2.271	87,000	8200T	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.510	0.133	5,100	A	crylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5 Plating of	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	8.420	2.198	84,200		Treated silica	Trade Secret	2	
		TOTALS:	100.000	26.100	1,000,000	Hetero	cyclic organic compound	Trade Secret	2	
	0.0261 a To	tal Mass						Total	100.00	
This semiconductor device and its homogenous materials comp 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via in If a chemical substance is absent from the list above, the chemic Incorporated's knowledge and belief as of the date of this docum	ly with EU Directive 2002/95/ nternal design controls, supp al substance is NOT an inter ent, there is no credible reas	EC (RoHS Directive), EU Directive 2011/65/EU (RoH plier declarations, and /or analytical test data. titional ingredient in the semiconductor device and, on to believe that the unavoidable impurity concen	S Recast Direct to the best of I tration of the c	tive) and with I Microchip Tech chemical subst	EU Directive nnology ance, if any,	2.27	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	8.7
is not below the threshold of regulatory concern for any regulator Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl.	ory scheme world-wide. hability standard for plastics. astics/	You can access the UL iQTM family of databases to	o obtain a test	report at	ter boy and	0.13	(mg) Total	Wire Bond	% of Total Weight	0.51
certain "reels" may be made from PVC plastic.	are made from polyvinyr one		ia the packing	shp on the ou	ici box unu		Doped Gold	7440-57-5	100	
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 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. 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 fancicipated 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.								Total	100.00	
Microchip Technology Incorporated does not provide any warran warranties provided by Microchip Technology Incorporated and quotations, sales order acknowledgement, and invoices.	nty, express or implied, with its subsidiaries are containe	respect to the information provided in this declarat d in Microchip's standard terms and conditions of s	ion. The exclus sale. These are	sive, limited pr provided in M	oduct crochip's	2.20	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.42
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use this Certificate of Compliance for semiconductor products.	ges to Material Content Decla ers' reliance on the informati	arations and shall not be liable for any damages, di on in Material Content Declarations (MCD) or indep	ect or indirect, endent third pa	, consequentia arty test report	l or s (SGS) or of		Tin	7440-31-5	100.00	
						L '		Total	100.00	·
						26.10				100.00

MICROCHIP Semiconductor Device Type	: MV 40 (Lead)	UQFN 5x5x0.5mm (S5)	Termin Cop	ation Base A oper Alloy (C	Alloy: u))	JEDEC 97 Product Marking and/or Pkg. Labeling e3		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	18.45	(mg) Total	Mold Compound	% ot Total Weight	43.41
	00070.00.0	Mald Organization	20.000	40.004	200.000		Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLR # 500-033-5)	Trade Secret	Mold Compound	2 105	0.895	21.054	EWIE-G//URCD	(Recip (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.105	0.895	21,054	Lpox	Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.130	0.055	1.302		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	41,966	17.836	419.664		Garbon Black	Total	100.00	
Tin	7440-31-5	Lead Frame	0.108	0.046	1.077	18.31	(mg) Total	Lead Frame	% of Total Weight	43.08
Silver	7440-22-4	Lead Frame	0.821	0.349	8,207	EFTEC64T + Ag	Copper	7440-50-8	97.42	10100
Zinc	7440-66-6	Lead Frame	0.078	0.033	775		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.108	0.046	1,077		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.240	0.527	12,402		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.286	0.122	2,862		Chromium	7440-47-3	0.25	
I reated silica	Trade Secret	Die Attach	0.032	0.014	318			lotal	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.032	0.014	318	0.68	(mg) Total	Die Attach	% of Total Weight	1.59
Silicon	7440-21-3	Chip (Die)	6.650	2.826	66,500	82001	Silver	7440-22-4	/8	
Gold	7440-57-5	Wire Bond	1.540	0.655	15,400	i i	Acrylate resins Proprietary	Trade Secret	18	
III	7440-31-5	Plating on external leads (pins) - Matter IIn / annealed at 150°C for 1 hour	100 000	1.565	1 000 000	Hotor	i realeu silica	Trade Secret	2	
LITL / Material compilation	0.0425	a Total Mass	100.000	42.500	1,000,000	Helei	ocyclic organic compound	Total	2 100.00	
This semiconductor device and its because metanicle as	0.0423	g Total Mass			· •) • • • •					
with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive 2002/53/EC (End-of-Life Vehicles (ELV)	ective).	tive 2002/95/EC (ROHS Directive), EU Directive 2011/6	5/EU (ROHS R	ecast Directiv	/e) and	2.83	Total (mg)	Chip (Die)	% of Total Weight	6.65
Compliance with the above EU Directives has been verified v	ia internal design c	ontrols, supplier declarations, and /or analytical test d	ata.				Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the che Technology Incorporated's knowledge and belief as of the da chemical substance, if any, is not below the threshold of reg	emical substance is ate of this document ulatory concern for	NOT an intentional ingredient in the semiconductor d t, there is no credible reason to believe that the unavo any regulatory scheme world-wide.	evice and, to t idable impurit	he best of Mi y concentrati	crochip on of the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 fla http://ul.com/global/eng/pages/offerings/industries/chemicals	mmability standard s/plastics/	l for plastics. You can access the UL iQTM family of da	atabases to ob	otain a test re	port at	0.65	(mg) Total	Wire Bond	% of Total Weight	1.54
The protective "tubes" in which the specific product is shipp outer box and certain "reels" may be made from PVC plastic	ed are made from p	olyvinyl chloride (PVC) plastic. "Window envelopes" (used to hold th	ne packing sl	ip on the		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information semiconductor devices in their original packing materials is Incorporated cannot guarantee the completeness and accure Sheets provided by raw material suppliers. Supplier informal subcontract assemblers and raw material suppliers. Informa significant toxic metals components. These estimates do not in the finished parts.	The box and certain "reels" may be made from PVC plastic. icrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's miconductor 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 corporated 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 neets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by bocontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated gnificant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC)								100.00	
Microchip Technology Incorporated does not provide any wa product warranties provided by Microchip Technology Incor provided in Microchip's quotations, sales order acknowledge	nranty, express or i porated and its subs ement, and invoices	mplied, with respect to the information provided in thi idiaries are contained in Microchip's standard terms .	s declaration. and condition	The exclusiv s of sale. The	e, limited se are	1.59	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	3.73
Microchip disclaims any duty to notify users of updates or cl consequential or otherwise, suffered by users or third parties third party test reports (SGS) or of this Certificate of Complia	nanges to Material C s as a result of the u nce for semiconduc	Content Declarations and shall not be liable for any da sers' reliance on the information in Material Content I tor products.	mages, direct Declarations (I	or indirect, MCD) or inde	pendent		Tin	7440-31-5	100.00	
								Total	100.00	' I
						42.50				100.00

			Termir Co	nation Base A pper Alloy (C	Alloy: Cu)		Package Home 8.1 Electronics (e	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Type	: QVCE 16(L	ead) VQFN 3x3x0.9mm (QV)	0/ Total	r						
Basic Substanco	CAS Number	Sub-Component	% Total Weight	malnart	nnm	12.83	(mg) Total	Mold Compound	% ot Total Weight	50.7
Silica vitrous (or fused)	60676-86-0	Mold Compound	43.095	10.903	430.950	G770HT	Silica vitreous (or fused)	60676-86-0	85.00	1
Enovy Resin	Trade Secret	Mold Compound	43.035	1 116	44 109	0//0/11	Enoxy 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	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	41,540	10.510	415.397	1		Total	100.00	Ш
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	C194 + Ag	Copper	7440-50-8	95.54	10110
Zinc	7440-66-6	Lead Frame	0.054	0.014	544	0.01.ng	Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.036	0.009	359	1	Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.360	0.344	13.600	1	Zinc	7440-66-6	0.13	
Epoxy Resin	Trade secret	Die Attach	0.340	0.086	3,400	1	Phosphorous	7723-14-0	0.08	
Doped GaAs	1300-00-00	Chip (Die)	1.340	0.339	13,400	1		Total	100.00	1
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	8352L	Silver	7440-22-4	80.00	
	1110010	TOTALS'	100.000	25.300	1.000.000	00011	Epoxy Resin	Trade secret	20.00	
	0 0 2 5 3	a Total Mass			,,			Total	100.00	U I
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive) Compliance with the above EU Directives has been verified via inte If a chemical substance is absent from the list above, the chemical Technology Incorporated's knowledge and belief as of the date of f substance, if any, is not below the threshold of regulatory concern	rnal design control substance is NOT his document, ther for any regulatory	is, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device an e is no credible reason to believe that the unavoidable in scheme world-wide.	d, to the best	of Microchip	ne chemical	0.34	(mg) Total	Chip (Die) 1300-00-00 Total	% of Total Weight 100 100.00	1.34
Molding compounds used by Microchip meet the UL94 V0 flammat http://ul.com/global/eng/pages/offerings/industries/chemicals/plas	ility standard for p tics/	lastics. You can access the UL iQTM family of databases	to obtain a te	est report at		0.10	(mg) Total	Wire Bond	% of Total Weight	0.4
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" used to h	hold the pack	ing slip on th	e 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 because suppliers. Supplier information is often protected from disclosure material explore. Information is provided only ac estimate of the material explore.	s form concerning best of its knowle use it has been co as trade secrets an	substances restricted by RoHS in Microchip Technology dge and belief, as of the date listed in this form. Microchi mpiled based on the ranges provided in Material Safety D d some information may not have been provided by sub- these next end the aurgrage weight of privilented circuit	Incorporated ip Technolog Data Sheets p contract asse	's semicondu y Incorporate rovided by ra mblers and r	uctor ed cannot w material aw			Total	100.00	<u> </u>
These estimates do not include trace levels of dopants, metals, and Microchip Technology Incorporated does not provide any warranty warrantics provided by Microchip Technology Incorporated and its	, express or implie	als contained within silicon devices (silicon IC) in the fini d, with respect to the information provided in this declar-	ished parts. ation. The exp	clusive, limite	ents. ed product	0.60	(mr) Totol	Plating on external leads (pins) - Matte Tin	% of Total Waight	2.28
Microchip's quotations, sales order acknowledgement, and invoice Microchip disclaims any duty to notify users of updates or changes	s. to Material Conter	t Declarations and shall not be liable for any damages, d	lirect or indir	ect, conseque	ential or	0.00		/ annealed at 150°C for 1 hour		2.30
otherwise, suffered by users or third parties as a result of the user: (SGS) or of this Certificate of Compliance for semiconductor produ-	s' reliance on the in Icts.	tormation in Material Content Declarations (MCD) or inde	ependent thir	d party test re	eports		Tin	7440-31-5	100.00	
						25.000		Total	130.00	100.000
										100.000

			Termin Cop	ation Base A oper Alloy (C	Alloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: .g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: QCF 16 (Lead) V	VQFN 3x3x0.75mm (3Q)								e4
		"Contained In"	% Total			10.05	(mg) Total	Mold Compound	%ot Total Weight	45 91
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		(g) 10ta.	inola compound	//ot rotal froight	-10101
Silica, vitreous (or fused)	60676-86-0	Mold Compound	39.024	8.546	390,235	G770HT	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	100.00	
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	C194	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	4	Phosphorous	7723-14-0	0.25	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.353	0.077	3,528	1	Zinc (Metal)	7440-44-0	0.15	
Treated silica	Trade Secret	Die Attach	0.039	0.009	392			Total	100.00	
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	8200T	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	rocyclic organic compound	Trade Secret	2	
Gold	7440-57-5	Plating on external leads (pins)	0.001	0.000	14			Total	100.00	
		TOTALS:	100.000	21.900	1,000,000	0.34	Total (mg)	Chip (Die)	% of Total Weight	1.55
	0.0219 a Te	otal Mass					Doped GaAs	1300-00-00	100	
his semiconductor device and its homogenous material: irective 2002/53/EC (End-of-Life Vehicles (ELV) Directive ompliance with the above EU Directives has been verifie	s comply with EU Directive 200). ed via internal design controls.	22/95/EC (RoHS Directive), EU Directive 2011/65/E supplier declarations, and /or analytical test data	U (RoHS Recast	Directive) and	d with EU	0.10	(mg) Total	Wire Bond	% of Total Weight	0.46
a chemical substance is absent from the list above, the echnology Incorporated's knowledge and belief as of the ubstance, if any, is not below the threshold of regulatory	chemical substance is NOT an e date of this document, there y concern for any regulatory so	intentional ingredient in the semiconductor dev is no credible reason to believe that the unavoida heme world-wide.	ice and, to the be ble impurity con	est of Microch centration of	ip the chemical		Doped Gold	7440-57-5	100	
lolding compounds used by Microchip meet the UL94 V0 ttp://ul.com/global/eng/pages/offerings/industries/chemi	<pre>flammability standard for plasticals/plastics/</pre>	stics. You can access the UL iQTM family of data	bases to obtain a	test report at	t		<u></u>	Total	100.00	
he protective "tubes" in which the specific product is sh ox and certain "reels" may be made from PVC plastic.	ipped are made from polyviny	I chloride (PVC) plastic. "Window envelopes" use	ed to hold the pa	cking slip on	the outer		() T - ()	Distinguistic		
Received Technological Internet of the Basis of the State	the state of the second s					0.06	(mg) I otai	Plating on external leads (pins)	% of Total Weight	0.28
Microcinp i econology incorporated believes the informat levices in their original packing materials is true and cor jugarantee the completeness and accuracy of data in this : uppliers. Supplier information is often protected from di naterial suppliers. Information is provided only as estimat 'hese estimates do not include trace levels of dopants, m	tion in this form concerning st rect to the best of its knowledg form because it has been com sclosure as trade secrets and ates of the average weight of th letals, and non-metal materials	bstances restricted by RoHS in Microchip Techni e and belief, as of the date listed in this form. Mic piled based on the ranges provided in Material S2 some information may not have been provided b tese parts and the average weight of anticipated s s contained within silicon devices (silicon IC) in th	blogy Incorporat crochip Technolo ifety Data Sheets y subcontract as significant toxic i he finished parts	ed's semicon ogy Incorpora provided by semblers and netals compo	ductor tted cannot raw material I raw onents.	0.06	(mg) Total	Plating on external leads (pins)	%of Total Weight 94.50	0.28
Microcnip i econology incorporated believes the informat levices in their original packing materials is true and cor- juarantee the completeness and accuracy of data in this uppliers. Supplier information is often protected from di- naterial suppliers. Information is provided only as estima 'hese estimates do not include trace levels of dopants, m licrochip Technology Incorporated does not provide any rarranties provided by Microchip Technology Incorporate licrochip's quotations, sales order acknowledgement, an	tion in this form concerning st rect to the best of its knowledg form because it has been com isclosure as trade secrets and ates of the average weight of th tetals, and non-metal materials warranty, express or implied, ad and its subsidiaries are con d invoices.	bstances restricted by RoHS in Microchip Techni e and belief, as of the date listed in this form. Mic piled based on the ranges provided in Material SS some information may not have been provided by uses parts and the average weight of anticipated s a contained within silicon devices (silicon IC) in the with respect to the information provided in this of tained in Microchip's standard terms and condition	blogy Incorporat crochip Technoli ifety Data Sheets y subcontract as significant toxic he finished parts leclaration. The ons of sale. The	ed's semicon ogy Incorpora provided by semblers and metals compo exclusive, lim te are provide	ductor tted cannot raw material I raw onents. ited product ed in	0.06	(mg) Total Nickel Palladium	7440-02-0 7440-02-0	% of Total Weight 94.50 5.00	0.28
Microcnip i econology incorporated believes the informat levices in their original packing materials is true and cor juarantee the completeness and accuracy of data in this i suppliers. Supplier information is often protected from di naterial suppliers. Information is provided only as estimi 'hese estimates do not include trace levels of dopants, m licrochip Technology Incorporated does not provide any varranties provided by Microchip Technology Incorporate licrochip's quotations, sales order acknowledgement, an licrochip disclaims any duty to notify users of updates o therwise, suffered by users or third parties as a result of 3GS) or of this Certificate of Compliance for semiconduc	tion in this form concerning st. rect to the best of its knowledg form because it has been com isclosure as trade secrets and ates of the average weight of th tetals, and non-metal materials. 'warranty, express or implied, ad and its subsidiaries are con id invoices. r changes to Material Content I the users' reliance on the info tor products.	bstances restricted by RoHS in Microchip Techni e and belief, as of the date listed in this form. Mic piled based on the ranges provided in Material SE some information may not have been provided b uses parts and the average weight of anticipated as a contained within silicon devices (silicon IC) in the with respect to the information provided in this of tained in Microchip's standard terms and condition Declarations and shall not be liable for any dama rmation in Material Content Declarations (MCD) of	ology Incorporat crochip Technoli frety Data Sheets y subcontract as significant toxic i he finished parts leclaration. The ons of sale. Thes ges, direct or inder independent th	ed's semicon ogy Incorpora provided by semblers and metals compo - exclusive, lim se are provide lirect, conseq ird party test	ductor tited cannot raw material I raw onents. ited product rd in uential or reports	0.06	(mg) Total Nickel Palladium Gold	7440-02-0 7440-05-03 7440-57-5	% of Total Weight 94.50 5.00 0.50	0.28
crocnip rechnology incorporated believes the informal svices in their original packing materials is true and cor iarantee the completeness and accuracy of data in this ippliers. Supplier information is provided only as estima uses estimates do not include trace levels of dopants, m crochip Technology Incorporated does not provide any arranties provided by Microchip Technology Incorporate crochip's quotations, sales order acknowledgement, an crochip disclaims any duty to notify users of updates o herwise, suffered by users or third parties as a result of GS) or of this Certificate of Compliance for semiconduc	tion in this form concerning st rect to the best of its knowled; form because it has been com isclosure as trade secrets and ates of the average weight of th tetals, and non-metal material: ' warranty, express or implied, ad and its subsidiaries are con id invoices. r changes to Material Content I the users' reliance on the info tor products.	bstances restricted by RoHS in Microchip Techni e and belief, as of the date listed in this form. Mic piled based on the ranges provided in Material SS some information may not have been provided by uses parts and the average weight of anticipated s a contained within silicon devices (silicon IC) in the with respect to the information provided in this of tained in Microchip's standard terms and condition Declarations and shall not be liable for any dama rmation in Material Content Declarations (MCD) of	ology Incorporat crochip Technoli fiety Data Sheets y subcontract as significant toxic i he finished parts leclaration. The ons of sale. Thes ges, direct or ind r independent th	ed's semicon ogy Incorpora provided by semblers and metals compo - exclusive, lim e are provide lirect, conseq ird party test	ductor ated cannot raw material I raw onents. ited product ed in uuential or reports	0.06	(mg) Total Nickel Palladium Gold	Plaung on external leads (pins) 7440-02-0 7440-05-03 7440-57-5	% of Total Weight 94.50 5.00 0.50	0.28

MICROCHIP Semiconductor Device Type	:: QDE 24 (L	ead) WQFN 4x4x0.75 mm (QW)	Tern C	nination Base Copper Alloy	e Alloy: (Cu)		Package Homog 8.1 Electronics (e.g	geneous Materials: . pc boards, displays)		JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			17 88	(mg) Total	Mold Compound	% of Total Weight	45.6
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm		(g) i ota		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-1010
Silica, fused	60676-86-0	Mold Compound	41.040	16.088	410,400	EME G770HT	Silica, fused	60676-86-0 Trada Casaat	90.00	
Epoxy Kesin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.212	0.867	22,116	Epo	Phonolic Posin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.137	0.007	1.368		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	47.559	18.643	475.586		Salbon Black	Total	100.00	1
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	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.062	0.024	622		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.041	0.016	411		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.858	0.336	8,580		Zinc	7440-66-6	0.13	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.198	0.078	1,980		Phosphorous	7723-14-0	0.08	
Treated silica	Trade Secret	Die Attach	0.022	0.009	220			Total	100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.022	0.009	220	0.43	(mg) Total	Die Attach	% of Total Weight	1.1
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	0.870	0.341	8,700	8200TI	Silver	7440-22-4	78	
Doped Gold	7440-57-5	Wire Bond	0.380	0.149	3,800		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.270	0.890	22,700		Treated silica	Trade Secret	2	
		TOTALS:	100.000	39.200	1,000,000	Hete	rocyclic organic compound	Trade Secret	2	
	0.0392	g Total Mass						Total	100.00	
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 s Incorporated's knowledge and belief as of the date of this document	mal design controls substance is NOT a	s, supplier declarations, and /or analytical test data. n intentional ingredient in the semiconductor device and, t le reason to believe that the unavoidable impurity concent	o the best of ration of the	Microchip Tec	chnology stance, if any,	0.34	(mg) Total Gallium arsenide (GaAs)	Chip (Die) 1303-00-0 Total	% of Total Weight 100 100.00	0.87
is not below the threshold of regulatory concern for any regulatory s Molding compounds used by Microchip meet the UL94 V0 flammabi http://ul.com/global/eng/pages/offerings/industries/chemicals/plasti	scheme world-wide ility standard for pl cs/	a. astics. You can access the UL iQTM family of databases to	obtain a test	report at		0.15	(mg) Total	Wire Bond	% of Total Weight	0.38
The protective "tubes" in which the specific product is shipped are certain "reels" may be made from PVC plastic.	made from polyvin	yl chloride (PVC) plastic. "Window envelopes" used to hol	d the packing	g slip on the o	uter box and		Doped Gold	7440-57-5	100.00	
Microchip Technology Incorporated believes the information in this their original packing materials is true and correct to the best of its completeness and accuracy of data in this form because it has been information is often protected from disclosure as trade secrets and provided only as estimates of the average weight of these parts and dopants, metals, and non-metal materials contained within silicon d	form concerning s knowledge and beli compiled based or some information r the average weigh levices (silicon IC)	ubstances restricted by RoHS in Microchip Technology In ief, as of the date listed in this form. Microchip Technology 1 the ranges provided in Material Safety Data Sheets provi- may not have been provided by subcontract assemblers an t of anticipated significant toxic metals components. These in the finished parts.	corporated's Incorporate led by raw m d raw materia e estimates d	semiconducto d cannot guar aterial supplie al suppliers. In lo not include	or devices in antee the ers. Supplier nformation is trace levels of			Total	100.00	
Microchip Technology Incorporated does not provide any warranty, warranties provided by Microchip Technology Incorporated and its quotations, sales order acknowledgement, and invoices.	express or implied subsidiaries are co	I, with respect to the information provided in this declaration ntained in Microchip's standard terms and conditions of satisfies the standard terms are standard terms and conditions of satisfies the standard terms are standard terms and conditions of satisfies the standard terms are standard terms a	on. The exclu ile. These are	isive, limited p provided in N	oroduct Microchip's	0.89	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.27
Microchip disclaims any duty to notify users of updates or changes otherwise, suffered by users or third parties as a result of the users' this Certificate of Compliance for semiconductor products.	to Material Conten reliance on the info	t Declarations and shall not be liable for any damages, dire ormation in Material Content Declarations (MCD) or indepe	ct or indirec ndent third p	t, consequenti party test repo	ial or rts (SGS) or of		Tin	7440-31-5	100.00	
								Total	100.00	
						39.20	0			100.000

		ENa a a se con	Tern	nination Bas Copper Alloy	e Alloy: (Cu)		Package Hom 8.1 Electronics (e	ogeneous Materials: a.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device	Type: QADE 12 (Lead) AQ	FN 2x2x0.45mm (QL)	% Total	1	r			1		
Basic Substance	CAS Number	Sub-Component	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	EME G770HT	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		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	C7025 + Ag	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	1	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 Plating o	n external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100	0.111	11,000	8352L	Silver	7440-22-4	80.00	
		TOTALS:	100.000	10.100	1,000,000		Epoxy Resin	Trade secret	20.00	
	0.0101 g Total Mass								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 ch Technology Incorporated's knowledge and belief as of the d	via internal design controls, sup emical substance is NOT an int ate of this document, there is n	plier declarations, and /or analytical test data. entional ingredient in the semiconductor device o credible reason to believe that the unavoidable	and, to the t impurity co	best of Microo	hip f the chemical	0.12 Doped GaAs	(mg) Total Gallium arsenide (GaAs)	Chip (Die) 1303-00-0 Total	% of Total Weight 100.00 100.00	1.23
Molding compounds used by Microchip meet the UL94 V0 fla http://ul.com/global/eng/pages/offerings/industries/chemica	ammability standard for plastics Is/plastics/	. You can access the UL iQTM family of databas	es to obtain	a test report	at	0.04	(mg) Total	Wire Bond	% of Total Weight	0.37
The protective "tubes" in which the specific product is shipp and certain "reels" may be made from PVC plastic.	ped are made from polyvinyl ch	loride (PVC) plastic. "Window envelopes" used t	o hold the p	acking slip o	n the outer box		Doped Gold	7440-57-5	100.00	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correc guarantee the completeness and accuracy of data in this for suppliers. Supplier information is often protected from disc suppliers. Information is provided only as estimates of the a estimates do not include trace levels of dopants, metals, and	n in this form concerning substa t to the best of its knowledge ar m because it has been compile losure as trade secrets and som average weight of these parts an d non-metal materials contained	ances restricted by RoHS in Microchip Technolo Id belief, as of the date listed in this form. Micro Id based on the ranges provided in Material Safet e information may not have been provided by si d the average weight of anticipated significant to within silicon devices (silicon IC) in the finisher	gy Incorpora chip Techno y Data Sheet ubcontract a oxic metals o d parts.	ated's semico ology Incorpo ts provided b assemblers ar components.	nductor rated cannot y raw material id raw material These			Total	100.00	
Microchip Technology Incorporated does not provide any warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, and	arranty, express or implied, with and its subsidiaries are contain invoices.	a respect to the information provided in this deci ed in Microchip's standard terms and conditions	laration. The s of sale. The	e exclusive, li ese are provid	mited product led in	0.11	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.1
Microchip disclaims any duty to notify users of updates or c otherwise, suffered by users or third parties as a result of th (SGS) or of this Certificate of Compliance for semiconductor	hanges to Material Content Decl e users' reliance on the informa r products.	arations and shall not be liable for any damages tion in Material Content Declarations (MCD) or ir	s, direct or ir ndependent f	ndirect, conse third party te	equential or st reports		Tin	7440-31-5	100.00	
								Total	100.00	-
						10 400				100 000

	0105 40 -		Termir Co	nation Base . pper Alloy (C	Alloy: Cu)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Type:	QXCE 16(L	ead) XQFN 3x3x0.45mm (QR)	W Total	r	1					65
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	7.94	(mg) Total	Mold Compound	%ot Total Weight	44.83
Silica fused	60676-86-0	Mold Compound	40.347	7 149	403 470	EME G770HT	Silica, fused	60676-86-0	90.00	1
Epoxy Resin	Trade Secret	Mold Compound	2.174	0.385	21,743		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.174	0.385	21,743		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.134	0.024	1,345		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	45.544	8.070	455,442			Total	100.00	
Nickel	7440-02-0	Lead Frame	1.215	0.215	12,146	8.47	(mg) Total	Lead Frame	% of Total Weight	47.82
Silicon	7440-21-3	Lead Frame	0.215	0.038	2,152	C7025 + Aq	Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.048	0.008	478	5	Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.798	0.141	7,981		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.728	0.129	7,280		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.182	0.032	1,820		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.490	0.441	24,900			Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.560	0.099	5,600	0.16	(mg) Total	Die Attach	% of Total Weight	0.91
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.390	0.601	33,900	8352L	Silver	7440-22-4	80.00	
		TOTALS:	100.000	17.720	1,000,000		Epoxy Resin	Trade secret	20.00	
	0.0177	a Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comply w Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	vith EU Directive 2	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Di	rective) and v	with EU	0.44	(mg) Total	Chip (Die)	% of Total Weight	2.49
Compliance with the above EU Directives has been verified via inter-	hai design contro	is, supplier declarations, and /or analytical test data.				Doped GaAs	Gallium arsenide	1303-00-0	100	
If a chemical substance is absent from the list above, the chemical s Technology Incorporated's knowledge and belief as of the date of th substance, if any, is not below the threshold of regulatory concern f	substance is NOT is document, the or any regulatory	an intentional ingredient in the semiconductor device an e is no credible reason to believe that the unavoidable in scheme world-wide.	id, to the besi npurity conce	of Microchip Intration of th) ne chemical			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flammabi http://ul.com/global/eng/pages/offerings/industries/chemicals/plasti	lity standard for p cs/	lastics. You can access the UL iQTM family of databases	to obtain a te	est report at		0.10	(mg) Total	Wire Bond	% of Total Weight	0.56
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" used to h	hold the pack	ing slip on th	e outer		Doped Gold	7440-57-5	100.00	
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 becau suppliers. Supplier information is often protected from disclosure a material suppliers. Information is provided only as estimates of the These estimates do not include trace levels of dopants, metals, and	form concerning best of its knowle ise it has been co s trade secrets an average weight of non-metal materi	substances restricted by RoHS in Microchip Technology dge and belief, as of the date listed in this form. Microchi mpiled based on the ranges provided in Material Safety I d some information may not have been provided by sub i these parts and the average weight of anticipated signifi als contained within silicon devices (silicon IC) in the fini	Incorporated ip Technolog Data Sheets p contract asse icant toxic mo ished parts.	's semicondo y Incorporate rovided by ra mblers and r etals compon	uctor ed cannot w material aw ients.		u	Total	100.00	"
Microchip Technology Incorporated does not provide any warranty, warranties provided by Microchip Technology Incorporated and its Microchip's quotations, sales order acknowledgement, and invoices	express or implie subsidiaries are c	d, with respect to the information provided in this declar ontained in Microchip's standard terms and conditions o	ation. The ex f sale. These	clusive, limito are provided	ed product in	0.60	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	%of Total Weight	3.39
Microchip disclaims any duty to notify users of updates or changes otherwise, suffered by users or third parties as a result of the users' (SGS) or of this Certificate of Compliance for semiconductor produc	to Material Conter reliance on the ir sts.	nt Declarations and shall not be liable for any damages, c formation in Material Content Declarations (MCD) or inde	direct or indir ependent thir	ect, conseque d party test re	ential or eports		Tin	7440-31-5	100.00	
								Total	100.00	
						17.720)			100.000

Basic Subtance CAS Number Contained In- Subs, Network Subs, Component Weight Might Might Network Paint Might Mittigen Subs, Network Mid Compound State, Alexan State Alexan Mid Compound State Alexan State Alexan		e: QR 16 () ead	SOP (H5)	Termin Co	nation Base / pper Alloy (C	Alloy: Su)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substrate CAS Number Sub-Component Weight miggert Note (View) Note (View) <th></th> <th></th> <th>"Contained In"</th> <th>% Total</th> <th></th> <th>[</th> <th>48.50</th> <th>(mg) Total</th> <th>Mold Compound</th> <th>% of Total Weight</th> <th>59</th>			"Contained In"	% Total		[48.50	(mg) Total	Mold Compound	% of Total Weight	59
Since Number Since Antical Ant	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	40.50	(iiig) rotai	word compound	% or rotal weight	50
$\frac{1}{1000} (see in the brane best of the brane brane$	Silica, vitreous	60676-86-0	Mold Compound	49.300	41.225	493,000	EME-G600	Silica, vitreous	60676-86-0	85.00	
Precise Resh (b) 8 /CL 8903, No. Bartimory (bodie) Table Social Model Compound 33/33 2 / // 3 / 3 / 3 / 2 / 7 / 33/35 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 3 / 2 / 7 // 3 / 3 / 2 / 2 / 2 / 2 / 2 / 2 / 2 /	Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.553	2.971	35,525		Epoxy Resin	Trade Secret	6.13	
Look Under Display Sec / 1440 254 Display Sec / 1440 244	Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.553	2.971	35,525	-	Phenolic Resin	Trade Secret	6.13	
Landon Bank 10.45 bit 10.10 bit 10.16 bit 10.20 bit Landon Bank L	Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.421	1.188	14,210		Epoxy, Cresol Novolac	29690-82-2	2.45	
Control Control Control Control State Control	Carbon Black	1333-86-4	Mold Compound	0.174	0.145	1,740	-	Carbon Black	1333-86-4	0.30	J
Intern 1/20 <	Copper	7440-50-8	Lead Frame	35.893	30.014	358,934			Total	100.00	
Start7440-224Lead Finne0.7160.5287.717714.72Procession7242-510Lead Finne0.0210.0287.717714.72Start7440-224Die Attach0.0220.1662.220Epoxy resinTrade SecretDie Attach0.0060.0060.00Metal oxide7440-273Die Attach0.0060.0080.00Metal oxide7440-273Die Attach0.0060.0080.00Metal oxide7440-273Die Attach0.0000.0080.00Start7440-274Die Attach0.0000.0080.000Metal oxide7440-275Die New Boed0.0000.0020.000Metal oxide7440-275New Boed0.0000.0020.000Metal oxide0.0000.0000.0000.0000.000Metal oxide0.0000.0000.0000.0000.000Metal oxide <td>Iron</td> <td>7439-89-6</td> <td>Lead Frame</td> <td>0.883</td> <td>0.738</td> <td>8,829</td> <td>31.42</td> <td>(mg) Total</td> <td>Lead Frame</td> <td>% of Total Weight</td> <td>37.57</td>	Iron	7439-89-6	Lead Frame	0.883	0.738	8,829	31.42	(mg) Total	Lead Frame	% of Total Weight	37.57
$\frac{2 \text{ Co}}{1 \text{ Product}} = \frac{744 \text{ Co}}{1 \text{ Co}} = \frac{744 \text{ Co}}$	Silver	7440-22-4	Lead Frame	0.716	0.598	7,157	194+AG	Copper	7440-50-8	95.54	
Physical constraints Trade Stand Load Trans 0.035 0.005	Zinc	7440-66-6	Lead Frame	0.047	0.039	470		Iron	7439-89-6	2.35	
Solution 1/40/24 al De Attain 0.220 1185 2/20 Exclosion 7/40/24 al 0.03 is possible Gamma-burydictore 96-46 0 Die Attain 0.000 00000 0.000 0000 0.000 0000 0.000 00000 0.000 00000 0.000 00000 0.000 000000 0.000 000000 0.000 000000 0.000 0000000 0.000 00000000000000000000000000000000	Phosphorous	7723-14-0	Lead Frame	0.031	0.026	310		Silver	7440-22-4	1.91	
Lipport Trade Sected Dia Atlach Dial Dial <thdia< th=""> Dia Dia</thdia<>	Silver	7440-22-4	Die Attach	0.222	0.186	2,220	-	Zinc	7440-66-6	0.13	
Media code Index Secret Die Attach 0.008 0.008 0.008 0.008 0.00 0.008 0.00 0.008 0.000 </td <td>Epoxy resin</td> <td>Trade Secret</td> <td>Die Attach</td> <td>0.060</td> <td>0.050</td> <td>600</td> <td></td> <td>Phosphorous</td> <td>7723-14-0</td> <td>0.08</td> <td></td>	Epoxy resin	Trade Secret	Die Attach	0.060	0.050	600		Phosphorous	7723-14-0	0.08	
Camma butyrolizatione 99-48-9 Die Attach 0.009 0.0109 0.0109 0.025 (ma) Total De Attach % of Total Weight 0.3 Gold 7440-97.5 Wire Bond 1472 17.00 18.00 14.72 17.00 19.00 1.000 <td< td=""><td>Metal oxide</td><td>I rade Secret</td><td>Die Attach</td><td>0.009</td><td>0.008</td><td>90</td><td></td><td></td><td>Total</td><td>100.00</td><td></td></td<>	Metal oxide	I rade Secret	Die Attach	0.009	0.008	90			Total	100.00	
Silicon 7440:213 Chip (Die) 1.720 1.472 17.600 0.472 7240:224 724 Gold 7440:213 Party on stand to ligon. Party on stand	Gamma-butyrolactone	96-48-0	Die Attach	0.009	0.008	90	0.25	(mg) Total	Die Attach	% of Total Weight	0.3
Gold 7440575 Peringen external base (PVC) Unite Bond 0.502 6.000 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	Silicon	7440-21-3	Chip (Die)	1.760	1.472	17,600	8290	Silver	7440-22-4	74	
Tin Tin Telegon exempting and provide the Tin Large and eased at 50°C for 1 two. 1.770 1.480 1.7700 Tin Line to the tine tine to the tine tine to the tine tine to the tine tine to the tine to the tine to the tine tin the tine to the tinde tine tine to the tine tine to the tinde t	Gold	7440-57-5	Wire Bond	0.600	0.502	6,000		Epoxy resin	Trade Secret	20	
TOTALE: 100.000 8.3.820 1,000,000 Image: Comme Subviolations Comme Subviolatins Comme Subviolations	Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.770	1.480	17,700		Metal oxide	Trade Secret	3	
Outcome Outcome Total Total <thtotal< th=""> Total Total</thtotal<>			TOTALS:	100.000	83.620	1,000,000		Gamma-butyrolactone	96-48-0	3	
This 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 Chip (Dir) % of Total Weight 1.76 Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Doped Silcon 744-021-3 100 Is 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 echonology incorporated Simplifier accoss to believe that the unavoidable inpurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. 0.50 (mg) Total Wire Bond % of Total Weight 0.50 Microchip rechnology incorporated Simplifierings/nubst		0.0836	g Total Mass						Total	100.00	
hemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Molding compounds used by Microchip meet the UL4 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at 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 tox and certain "reels" may be made from PVC plastic. Alicrochip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated's semiconductor tevices 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 hare material suppliers. 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 estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Nicrochip 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 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 Microchip's total uses of re acknowledgement, and invoices. Nicrochip dusclaims any duty to notify users of updates or changes to Material Content Declarations (MCD) or independent third party test reports SGS) or of this Certificate of Compliance for semiconductor products. Note on the provide of the users' reliance on the information in Material Content Declarations (MCD	Compliance with the above EU Directives (EEV) Directive). If a chemical substance is absent from the list above, the chemic	nternal design con cal substance is No of this document, t	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab	e and, to the b	est of Microcl	nip the		Doped Silicon	7440-21-3 Total	100 100.00	
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 Nor and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor Inter ompleteness and accuracy of data in this form concerning substances restricted by RoHS in Microchip Technology Incorporated is suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and aw material suppliers. 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 estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Nicrochip 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 by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided or the users' reliance on the information in Material Scheme or updates, suffered by users or third parties as a result of the users' reliance on the information in Material Scheme or updates as a result of the users' reliance on the information in Material Scheme or updates as a result of the users' reliance on the information in Material Scheme or updates as a result of the users' reliance on the information in Material Scheme or updates as a result of the users' reliance on the information in Material Scheme or updates as a result of the users' reliance on the information in Material Scheme or updates	Chemical substance, if any, is not below the threshold of regulat Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	ability standard fo astics/	y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa	ases to obtain a	a test report a	it	0.50	(mg) Total	Wire Bond	% of Total Weight	0.6
Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor tevices 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 juarantee 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 provided of up as estimates of the average weight of these parts and the average weight of the these parts and the average weight of these parts and containes these pa	The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	I to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
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. 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 therwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated believes the information in in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concerni the best of its know ecause it has been disclosure as trad s of the average w and non-metal mat	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been pro eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	logy Incorpora rochip Technol ety Data Sheets vided by subco ed significant to e finished parts	ted's semicor ogy Incorpor s provided by ontract assem oxic metals co s.	nductor ated cannot raw blers and omponents.			Total	100.00	
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 the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid voices.	blied, with respect to the information provided in this de laries are contained in Microchip's standard terms and	claration. The conditions of s	exclusive, lin ale. These ar	nited e provided	1.48	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.77
Total 100.00	Microchip disclaims any duty to notify users of updates or chan otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro	ges to Material Cor ers' reliance on the oducts.	ttent Declarations and shall not be liable for any damag e information in Material Content Declarations (MCD) or	es, direct or in independent t	direct, consec hird party test	quential or t reports		Tin	7440-31-5	100.00	
									Total	100.00	

	N SAE 09.4	N 50/C and (10%)	Termin Co	nation Base A pper Alloy (C	Alloy: :u)		Package Hom 8.1 Electronics (é	ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Type	. SAE UO (Lea	d) SOIC 3.90mm(.150in) (C2)								
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	43.20	(mg) Total	Mold Compound	% ot Total Weight	60
Silica, vitreous	60676-86-0	Mold Compound	51.000	36.720	510,000	EME-G600	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.646	36,750		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.646	36,750		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.470	1.058	14,700		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.180	0.130	1,800		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	30.572	22.012	305,720	-		Total	100.00	
Iron	7439-89-6	Lead Frame	0.752	0.541	7,520	23.04	(mg) Total	Lead Frame	% of Total Weight	32
Silver	7440-22-4	Lead Frame	0.610	0.439	6,096	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.040	0.029	400		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.026	0.019	264		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.064	0.046	640		Zinc	7440-66-6	0.13	
Epoxy Resin	Trade Secret	Die Attach	0.014	0.010	136		Phosphorous	7723-14-0	0.08	
Copper (Cu)	7440-50-8	Die Attach	0.002	0.002	24			Total	100.00	
Silicon	7440-21-3	Chip (Die)	4.820	3.470	48,200	0.06	(mg) Total	Die Attach	% of Total Weight	0.08
Gold	7440-57-5	Wire Bond	0.100	0.072	1,000	8340	Silver (Ag)	7440-22-4	80	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	2.160	30,000		Epoxy Resin	Trade Secret	17	
		TOTALS:	100.000	72.000	1,000,000		Copper (Cu)	7440-50-8	3]
	0.0720	g Total Mass						Total	100.00	-
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via it	bly with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) an	d with EU	3.47	Total (mg)	Chip (Die)	% of Total Weight	4.82
	iternal acoign con	and supplier declarations, and for analytical test data.					Doped Official	7440 21 3	100	
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulat	cal substance is No of this document, t ory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably y regulatory scheme world-wide.	e and, to the b le impurity coi	est of Microch acentration of	nip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	ability standard fo astics/	r plastics. You can access the UL iQTM family of databa	ses to obtain a	a test report a	t	0.07	(mg) Total	Wire Bond	% of Total Weight	0.1
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in f devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concerni the best of its kno ecause it has been disclosure as trad s of the average w and non-metal mat	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been pro eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ty Data Sheets vided by subco d significant to finished parts	ed's semicor ogy Incorpora provided by ontract assem oxic metals co s.	nductor ated cannot raw blers and omponents.			Total	100.00	-
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid voices.	blied, with respect to the information provided in this de laries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These ar	ited e provided	2.16	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Cor ers' reliance on th oducts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or in independent t	direct, consect nird party test	quential or reports		Tin	7440-31-5	100.00	
						1 '		Total	100.00	-
						72 000				100.000

Міскоснір			Termii Co	nation Base A pper Alloy (C	Alloy: :u)		Package Homo 8.1 Electronics (e.c	geneous Materials: . pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device	Type: OA and SN 08	(Lead) (SOIC) (Small Outline -150mil) (C2)								e3
Daris October		"Contained In"	% Total			62.24	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm		Cilian vitra sur		-	1
Silica, vitreous	60676-86-0	Mold Compound	69.354	54.096	61 207	SG-8300ECM	Silica, vitreous	50575-85-0	86.91	
Epoxy Resili Phonolia Bosin	Trade Secret	Mold Compound	4.079	4.774	40.779		Phonolic Rosin	Trade Secret	5.11	
Carbon Plack	1222 96 4	Mold Compound	4.070	0.102	40,776		Carbon Blook	1222.96.4	0.21	
Calboli Black	7440 50 9	Lood Frame	10.021	7 925	2,474		Calboli black	1000-4 Total	0.31	J I
Coppei	7440-50-8	Lead Frame	0.247	0.102	2 469	0.40	(I used From a	No.00	40.5
liuli	7439-69-6	Lead Frame	0.247	0.192	2,400	8.19	(mg) I otal	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.156	2,000	CDA194+Ag	Copper	7440-50-8	95.54	
ZINC	7440-66-6	Lead Frame	0.013	0.010	131	_	Iron	7439-89-6	2.35	
Phosphorous Oiters (Arc)	7723-14-0	Lead Frame	0.009	0.007	87	-	Silver	7440-22-4	1.91	
Silver (Ag) Medified Ensury Basin	12561.09.5	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	//23-14-0	80.0	
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	8390A	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	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	0.975	12,500		Modified Amine	827-43-0	4	
		TOTALS:	100.000	78.000	1,000,000			Total	100.00	
	0.0780	a Total Mass				5.85	Total (mg)	Chip (Die)	% of Total Weight	7.5
This semiconductor device and its homogenous materials Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU		Doped Silicon	7440-21-3	100	
Compliance with the above EU Directives has been verified If a chemical substance is absent from the list above, the c	l via internal design conti hemical substance is NO	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device	e and, to the b	est of Microch	nip	0.45	() T	Wire Bond	9/ -6 T-1-1 Wei-bi	
chemical substance, if any, is not below the threshold of re	egulatory concern for any	regulatory scheme world-wide.		a tost report a	e	0.16	(mg) rotai	copper (CuPd)	%or rotar weight	0.2
http://ul.com/global/eng/pages/offerings/industries/chemic	als/plastics/		ses to obtain a	a test report a	L		Copper	7440-50-8	98	
The protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic.	pped are made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	acking slip on	the outer		Palladium	7440-05-3	2	
								Total	100.00	
Vicrochip Technology Incorporated believes the informatic devices in their original packing materials is true and corre guarantee the completeness and accuracy of data in this fo material suppliers. Supplier information is often protected raw material suppliers. Information is provided only as esti These estimates do not include trace levels of dopants, me	on in this form concernin bect to the best of its know orm because it has been of from disclosure as trade imates of the average we stals, and non-metal mate	g substances restricted by KOHS in Microchip Technolo ledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe secrets and some information may not have been prov ight of these parts and the average weight of anticipate- rials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ty Data Sheets rided by subco d significant to finished parts	ted's semicon logy Incorpora s provided by ontract assem oxic metals co s.	iductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any v product warranties provided by Microchip Technology Incc in Microchip's quotations, sales order acknowledgement, a	warranty, express or impl prporated and its subsidia and invoices.	ied, with respect to the information provided in this de aries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim sale. These are	iited e provided	0.98	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of t (SGS) or of this Certificate of Compliance for semiconduct	changes to Material Cont he users' reliance on the or products.	ent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or	es, direct or in independent ti	direct, consec hird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	-
						78 000				100 000

Beniconductor Device Type: B. 14 Lass SOIC (print output: them) (bloc) Total Mode Company Mode	Місвоснір			Termir Co	nation Base pper Alloy (0	Alloy: Cu)		Package Home 8.1 Electronics (e	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Basic Substance CAS Number (Substance) Constanted In' (SA) ''' clait might at the substance 114.27 run Total Made Compound 73.8 Sites, uitrosi (Particle Sites) 6007 (Sec.) Mode Compound 623.4 663.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92 664.31 663.92	Semiconductor Device	Type: SL 14 (Lead)	SOIC (Small Outline - 150mil) (D3/DG)								e3
BailsBuilsSub-ComponentWeightmagientinsplantinsplantNote CargariantNote StateNote Stat			"Contained In"	% Total		T					
Difference Differenc Differenc Differenc	Basic Substance	CAS Number	Sub-Component	Weight	ma/part	nnm	114.27	(mg) Total	Mold Compound	% ot Total Weight	79.8
Elson Totals Bonin Totals Bonin Model Compound 4,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 6,7/2 7/2 <th7 2<="" th=""> 7/2<td>Silica vitropuo</td><td>60676.96.0</td><td>Mold Compound</td><td>60.254</td><td>00.215</td><td>602 542</td><td>SC 9200CM</td><td>Cilico vitroouo</td><td>60676.96.0</td><td>96.01</td><td>1</td></th7>	Silica vitropuo	60676.96.0	Mold Compound	60.254	00.215	602 542	SC 9200CM	Cilico vitroouo	60676.96.0	96.01	1
$ \frac{ }{ $	Epoxy Resin	Trade Secret	Mold Compound	6 1 2 1	8 765	61 207	36-0300GW	Epovy Resin	Trade Secret	7.67	
Chebre Blas103.089-4Mold Compound0.4470.3470.3470.4470.044 <td>Phenolic Resin</td> <td>Trade Secret</td> <td>Mold Compound</td> <td>4 078</td> <td>5,839</td> <td>40 778</td> <td>-</td> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>5.11</td> <td></td>	Phenolic Resin	Trade Secret	Mold Compound	4 078	5,839	40 778	-	Phenolic Resin	Trade Secret	5.11	
Image: Control Control Provide Control	Carbon Black	1333-86-4	Mold Compound	0.247	0.354	2 474		Carbon Black	1333-86-4	0.31	
$\frac{107}{102} = \frac{107}{102} = \frac{102}{102} = $	Copper	7440-50-8	Lead Frame	10.031	14 365	100 314	-	Carbon Black		100.00	1
Silver 7440-22-4 Lead Frame 0.020 0.280 2.000 CA 198-Ad Total 7440-22-4 1000 Procephorus 7720-14-0 Lead Frame 0.001 0.012 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.017 0.012 0.017 0.014 0.004 0.010 0.012 0.01 0.010	Iron	7439-89-6	Lead Frame	0.247	0.353	2 468	15.04	(ma) Total	Load Framo	% of Total Weight	10.5
The Table of the second state of the second st	Silver	7440-22-4	Lead Frame	0.247	0.000	2,400	CDA 194+AG	Coppor	7440-50-8	95.54	10.5
Productions 722:14:0 Loss Frame 0.002 0.012 0.77 Model Epox, Rean 1356:46:5 Die Attich 0.056 0.686 5.686 Dipylochteria of the signenicif- 620:22:3 Die Attich 0.056 0.506 1.560 Model Epox, Rean 1356:46:5 Die Attich 0.056 0.566 1.560 Model Epox, Rean 1356:46:5 Die Attich 0.056 0.566 1.560 Model Epox, Rean 772:3:46 0.010 0.566 1.560 1.560 Model Epox, Rean 7440:21:3 Unit plant 0.000 1.772:440 0.010 0.020 1.772:440 0.010	Zinc	7440-22-4	Lead Frame	0.200	0.200	2,000	CDA 134TAG	Iron	7440-50-6	2 25	
Store: (A) 7440-22.4 Db Attlinich 0.056 0.057 0.057 Modified Expose Rain 1056-06.5 Die Attlich 0.056 0.056 0.057 1.057 1.050 0.057 Modified Flow Rain 827.450 Die Attlich 0.026 0.036 263 1.07 min Tatl Die Attlich 0.026 0.036 263 1.07 min Tatl Die Attlich 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.037 763.460 0.042 2.06 763 0.000 763.470 1.00.00 763.470 1.00.00 763.470 1.00.00 763.470 1.00.00 763.470 1.00.00 763.470 1.00.00 763.470	Phosphorous	7723-14-0	Lead Frame	0.013	0.013	87	-	Silvor	7439-09-0	1.01	
Modified Epony Res 13061-00-6 De Attach 0.000 0.100 0.100 0.000 0.000 0.000 Object/op/lett of Espinetor/F 5220-53.8 Die Attach 0.000	Silver (Ag)	7440-22-4	Die Attach	0.563	0.806	5.625	-	Zinc	7440-22-4	0.13	
Digktophend of Supplement Exception Total Total <t< td=""><td>Modified Epoxy Resin</td><td>13561-08-5</td><td>Die Attach</td><td>0.000</td><td>0.000</td><td>1 050</td><td></td><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td><td></td></t<>	Modified Epoxy Resin	13561-08-5	Die Attach	0.000	0.000	1 050		Phosphorous	7723-14-0	0.08	
Operating 107 4301 Die Attech 0.026 0.028 203 1.07 Image and the state	Diglycidylether of hisphenol-F	54208-63-8	Die Attach	0.056	0.081	563	-	Theopholodo	Total	100.00	1
Bitcom 7440213 Chip (Dip) 7.500 10.740 7.500 10.750 10.750	Modified Amine	827-43-0	Die Attach	0.000	0.001	263	1.07	(mg) Total	Die Attech	% of Total Waight	0.75
Dated Silon 7440/213 Wite Bord 0.208 7200 7208 7200 Tin 7440/213 Purge entermitlek pignit. 1000 1000 143.200 1,000.00 143.200 1,000.00 143.200 1,000.00 Total Mass Total 2 7707 LLS: 100.000 143.200 1,000.00 143.200 1,000.00 Total Mass Total 2 7707 LLS: 100.00 143.200 1,000.00 143.200 1,000.00 Total Mass Total Chip (Die) % of Total Weight 7.5 Colspan="2">Total Chip (Die) % of Total Weight 7.5 Total colspan="2">Total Chip (Die) % of Total Weight 7.5 Total Wire Bond % of Total Weight 7.5 Total Chip (Die) % of Total Weight 7.5 Total Chip (Die	Silion	7440 21 2	Chip (Dio)	7.500	10.740	75.000	82004	(ilig) Total	7440.22.4	75.00	0.75
Control mice Call of the production of the product of th	Danad Silican	7440-21-3	Wire Bond	7.500	0.296	2,000	0390A	Modified Epoxy Pesin	12561.09.5	14.00	
Image: Note: Section 1 Note: Section 2	Doped Silicon	7440-21-5	Disting on external leads (size) Matter Tin (appended at 150%C for 1 hour	1.200	1 700	2,000		inducidulation of bisphono	54208 62 8	7.50	
Outside Notice		7440-31-5	Plating of external leads (pirs) - Matter Hit/ antiealed at 150 C for 1 hour	100 000	143 200	1 000 000	-	Modified Amine	927-43-0	3.50	
Under Under Under Under Under Under Under This semiconductor device and its homogenous materials comply with EU Directive 2029/3/EC (RoHS Directive), EU Directive 2021/4/5/EU (RoHS Recast Directive) and with EU 10.74 (mg) Total Chip (Dire) % of Total Weight 7.5 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 10.74 (mg) Total Chip (Dire) % of Total Weight 7.5 Compliance via the above. EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 10.74 (mg) Total Chip (Dire) % of Total Weight 7.5 Technology Incorporated's knowledge and belor & the threshold of regulatory concern for any regulatory scheme world-wide. Nord and pole silicon 7440-21-3 100.00 Nording compounds used by Microchip meet the US-4V Of farm ability standard for plastic. You can access the UL IOTM family of databases to botain a test report at thres/viu.com/globalen/gbages/direings/industries/chemicals/plastics/ 0.29 (mg) Total Wire Bond % of Total Weight 0.2 Weirochip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated's semiconductor device and to industries and raw materials strip teston wara			TOTALS.	100.000	143.200	1,000,000		Woullied Allille	827-43-0	3.30	J
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive and, to the best of Microchip Technology 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, if any, is not balow the threshold of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any scheme worlf-wide. Wire Bond of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any regulatory scheme worlf-wide. Wire Bond of regulatory concern for any scheme worlf-wide. Wire Bond on the area regulatory scheme worlf-wide. Wire Bond on the area regulatory scheme worlf-wide in this form. Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and beine provided by RMS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and beine provide by RMS in Microchip Technology Incorporated's semiconductor devices and to not core in the scheme and some information may not have been provided by RMS regulatory scheme provided by RMS regulatory scheme provide by RMS regulatory scheme provided by RMS regulatory scheme provide by R		0.1432	g Total Mass						Iotai	100.00	
Company to company to the control of the entrol of the	Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	via internal design control	s supplier declarations, and for analytical test data	DHS Recast D	irective) and	with EU	10.74	(mg) Total	Chip (Die)	% of Total Weight	7.5
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the base of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reseance to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Molding 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 http://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. Microchip Technology Incorporated believes the information in this form concerning substances restricted by ReHS 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's semiconductor devices in their original packing materials is true end correct to the best of its knowledge and belief as of the date listed on the range servide of that als Sheets provided by subcontract assemblers and raw material suppliers. Information is provided on y as estimates of the average weight of these parts and the average weight of incleaded significated significated significated significated significated and its form for the subscience in the information provided in this form contenting as a result of the users of indicates are contained within silicon devices (silicon IC) in the finished parts. 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'	Compliance with the above Lo Directives has been vernica	na internal design control	s, supplier desidations, and for analytical test data.				Doped Silicon	Doped Official	1440 21 0	100	
Molding compounds used by Microchip meet the UL94 V0 flamability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at 0.29 (mg) Total Wire Bond % of Total Weight 0.2 http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ 0.29 (mg) Total Wire Bond % of Total Weight 0.2 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 Silicon 7440-21-3 100 100.00 Wire Bond waterials 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 complied based on the ranges provided by subcontract assemblers and 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 anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon CI) in the finished parts. 1.79 (mg) Total Plaing on external leads (pinis)- Matte Tin / anneel at 150°C for / anneel at 150°C for 1.25 Microchip Squates do not inclus the subsidiaries are contained in Microchip's standrad terms and conditions of sale. These ere	If a chemical substance is absent from the list above, the ch Technology Incorporated's knowledge and belief as of the d chemical substance, if any, is not below the threshold of reg	emical substance is NOT a ate of this document, there gulatory concern for any re	an intentional ingredient in the semiconductor device ar e is no credible reason to believe that the unavoidable ir sgulatory scheme world-wide.	nd, to the bes mpurity conce	t of Microchip entration of th	b he			Total	100.00	-
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 Silicon 7440-21-3 100 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 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 materials uppliers. Information is provided only as estimates of the eaverage 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. 1.79	Molding compounds used by Microchip meet the UL94 V0 fli http://ul.com/global/eng/pages/offerings/industries/chemica	ammability standard for pl lls/plastics/	lastics. You can access the UL iQTM family of databases	to obtain a te	est report at		0.29	(mg) Total	Wire Bond	% of Total Weight	0.2
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 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 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 (microchip's quotations, sales order acknowledgement, and invoices. Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.	The protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic.	ped are made from polyvir	nyl chloride (PVC) plastic. "Window envelopes" used to	hold the pack	ting slip on th	ne outer		Doped Silicon	7440-21-3	100	
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 guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material 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 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 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 a trip (mg) Total Plating on external leads (pins) - Matter Tin / annealed at 150°C for 1 hour othrwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.								u	Total	100.00	4
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 squotations, sales order acknowledgement, and invoices. Microchip technology lucer or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products. Total	Microchip Technology Incorporated believes the information devices in their original packing materials is true and correc guarantee the completeness and accuracy of data in this for suppliers. Supplier information is often protected from disc material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, met	n in this form concerning s t to the best of its knowler m because it has been co losure as trade secrets and s of the average weight of als, and non-metal materia	substances restricted by RoHS in Microchip Technology dge and belief, as of the date listed in this form. Microch mpiled based on the ranges provided in Material Safety I d some information may not have been provided by sub these parts and the average weight of anticipated signif als contained within silicon devices (silicon IC) in the fin	Incorporated ip Technolog Data Sheets p contract asse icant toxic mo ished parts.	I's semicond y Incorporate rovided by ra mblers and r etals compon	uctor ed cannot aw material raw nents.					
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 (SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated does not provide any w warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, and	arranty, express or implied and its subsidiaries are co invoices.	d, with respect to the information provided in this declar ontained in Microchip's standard terms and conditions o	ation. The ex f sale. These	clusive, limit are provided	ed product ∣in	1.79	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
	Microchip disclaims any duty to notify users of updates or or otherwise, suffered by users or third parties as a result of th (SGS) or of this Certificate of Compliance for semiconducto	changes to Material Conten le users' reliance on the in r products.	nt Declarations and shall not be liable for any damages, formation in Material Content Declarations (MCD) or ind	direct or indir ependent thir	ect, consequ d party test r	ential or eports		Tin	7440-31-5	100.00	
i otali i otali									Total	100.00	

MICROCHIP Semiconductor Device Type	: TF, F, OE, SO	, SL 16 (Lead) SOIC (Wide Outline - 300mil) (D9 / DZ)	Termii Co	nation Base A pper Alloy (C	uloy: u)		Package Homoge 8.1 Electronics (e.g. p	neous Materials: oc boards, displa	iys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Desis Outstance	CAC Number	"Contained In"	% Total Weight			307.43	(mg) Total	Mold Compound	% ot Total	70.19
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm	EME-	(3,		Weight	
Silica, vitreous	60676-86-0	Mold Compound	59.662	261.317	596,615	G600	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	-	Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	7440 50 9	Mold Compound	0.211	0.922	2,106		Carbon Black	1333-86-4	0.30	1
Сорреі	7440-50-6	Lead Flame	25.499	111.005	254,990			Total	100.00 % 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	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.033	0.146	334		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.022	0.096	220		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.370	1.621	3,700		Zinc	7440-66-6	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			Total	100.00	1
Gamma-butvrolactone	96-48-0	Die Attach	0.015	0.066	150	2.19	(mg) Total	Die Attach	% of Total Weight	0.5
Silicon	7440-21-3	Chip (Die)	1 850	8 103	18 500	8290	Silver	7440-22-4	74	`
Gold	7440-57-5	Wire Bond	0.090	0.394	900	0200	Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.680	2.978	6,800		Metal oxide	Trade Secret	3	
		TOTALS:	100.000	438.000	1,000,000		Gamma-butyrolactone	96-48-0	3	
	0.4380 c	Total Mass						Total	100.00	·
This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 20	02/95/EC (RoHS Directive), EU Directive 2011/65/EU (Rol	IS Recast Dire	ctive) and witl	h EU	8.10	Total (mg)	Chip (Die)	% of Total Weight	1.85
Compliance with the above EU Directives has been verified via inte	ernal design controls	s, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemical Incorporated's knowledge and belief as of the date of this docume any, is not below the threshold of regulatory concern for any regul	substance is NOT a nt, there is no credib atory scheme world-	n intentional ingredient in the semiconductor device and le reason to believe that the unavoidable impurity conce wide.	I, to the best o entration of the	f Microchip Te chemical sub	echnology ostance, if			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flammal http://ul.com/global/eng/pages/offerings/industries/chemicals/plas	bility standard for pla tics/	astics. You can access the UL iQTM family of databases	to obtain a tes	t report at		0.39	(mg) Total	Wire Bond	% of Total Weight	0.09
The protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.	e made from polyvin	yl chloride (PVC) plastic. "Window envelopes" used to h	old the packin	g slip on the c	outer box		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in thi their original packing materials is true and correct to the best of its completeness and accuracy of data in this form because it has bee Supplier information is often protected from disclosure as trade so Information is provided only as estimates of the average weight of include trace levels of dopants, metals, and non-metal materials co	s form concerning s s knowledge and beli en compiled based o ecrets and some info these parts and the ontained within silico	ubstances restricted by RoHS in Microchip Technology ef, as of the date listed in this form. Microchip Technolo n 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 co on devices (silicon IC) in the finished parts.	Incorporated's gy Incorporate wided by raw r semblers and r omponents. Th	semiconduct ed cannot gua naterial suppl aw material su ese estimates	or devices in rantee the iers. uppliers. do not			Total	100.00	- -
Microchip Technology Incorporated does not provide any warranty warranties provided by Microchip Technology Incorporated and its quotations, sales order acknowledgement, and invoices.	y, express or implied s subsidiaries are co	, with respect to the information provided in this declara ntained in Microchip's standard terms and conditions of	tion. The exclu sale. These ar	usive, limited e provided in	product Microchip's	2.98	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at	% of Total Weight	0.68
Microchip disclaims any duty to notify users of updates or change otherwise, suffered by users or third parties as a result of the user of this Certificate of Compliance for semiconductor products.	s to Material Conten s' reliance on the inf	t Declarations and shall not be liable for any damages, d ormation in Material Content Declarations (MCD) or inde	irect or indirec pendent third	t, consequent party test repo	ial or orts (SGS) or		Tin	7440-31-5	100.00	
									100.00	_

Basic Substance Contained in: Total Total Page Basic Substance Contained in: Page Page Contained in: Page		:: SL 16 (Lead) SOIC	(Small Outline - 150mil) (D7 / DV)	Termi Co	nation Base A pper Alloy (C	lloy: u)		Package Hom 8.1 Electronics (6	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic SolutioneCAR NumberSub-ComponentWrightmgnpartppm00.00(mg) TestMaint Compound9x 17 tell Winght9x 12Sins Amount1000 State1000 State<			"Contained In"	% Total							
Site, used the provide in the source	Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	60.00	(mg) Total	Mold Compound	% ot Total Weight	38.12
$\frac{1}{10000000000000000000000000000000000$	Silica, vitreous	60676-86-0	Mold Compound	32.402	51.001	324,020	EME-G600	Silica, vitreous	60676-86-0	85.00	
Benefic Res In Obs Br (2) SSOS, No diardinary totalish 0 00000000000000000000000000000000000	Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.335	3.675	23,349		Epoxy Resin	Trade Secret	6.13	
Egycs Case Mode 2000-252 Mode Compand 0.534 1.170 5.35 Concern 742-050-4 Mode Compand 0.257 0.331 2.27 0.000 0.000 Non 742-050-4 Mode Compand 0.297 0.391 2.27 0.000 <	Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.335	3.675	23,349		Phenolic Resin	Trade Secret	6.13	
Cale of Block 1333-864 Mod Compand 0.114 Unit Cale of Block 11.144 Use Cale of Block 11.258-26 Compand 11.258-26 Compand 11.258-26 Compand Comp	Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.934	1.470	9,339		Epoxy, Cresol Novolac	29690-82-2	2.45	
$ \frac{1}{1000} + $	Carbon Black	1333-86-4	Mold Compound	0.114	0.180	1,144		Carbon Black	1333-86-4	0.30	
Inn 7463-964 Last Frame 0.547 0.440 5471 40.00 (mm) Total (east Frame 5.47 25.41 Propulstoon 7723-140 Last Frame 0.021 0.033 2101 2000 2	Copper	7440-50-8	Lead Frame	24.276	38.211	242,761			Total	100.00	_
Bits Product P	Iron	7439-89-6	Lead Frame	0.597	0.940	5,971	40.00	(mg) Total	Lead Frame	% of Total Weight	25.41
$ \frac{2}{100} \frac{2}{100} \frac{1}{100} 1$	Silver	7440-22-4	Lead Frame	0.484	0.762	4,841	194+AG	Copper	7440-50-8	95.54	
$ \frac{\text{Pincephrouss}}{\text{Discretive}} = \frac{7220 \pm 0}{\text{Discretive}} = \frac{1000 \text{Pincephrouss}}{1000 \text{Pincephrous}} = \frac{7220 \pm 0}{1000 \text{Pincephrous}} = \frac{1000 \text{Pincephrouss}}{1000 \text{Pincephrous}} = \frac{1000 \text{Pincephrouss}}{1000 \text{Pincephrous}} = \frac{7240 \pm 0}{1000 \text{Pincephrouss}} = \frac{1000 \text{Pincephrouss}}{1000 \text{Pincephrouss}} = \frac{7440 \pm 224 \text{Pincephrouss}}{1000 \text{Pincephrouss}} = \frac{7440 \pm 244 \text{Pincephrouss}}{1000 Pinceph$	Zinc	7440-66-6	Lead Frame	0.032	0.050	318		Iron	7439-89-6	2.35	
Silver Burger and Functional problem in the serie of the descent in the serie of the desc	Phosphorous	7723-14-0	Lead Frame	0.021	0.033	210		Silver	7440-22-4	1.91	
Dester Rein94.00-1Die Attach0.5240.8245.205Proophous772-04-00.000Functionatized Uniforma Resin7209-984Die Attach0.1720.1720.1720.1720.000Export Resin73061-09.5Die Attach0.0070.1720.1720.070.000Siecon7440-21-3Ohje (Die)3.1805.053.1805.0010.00010.000Gold7440-27-5Wire Bond1.2101.90512.100Diest Resin94.0041.5This semiconductor device and its compt with EU Directive 2003/SEC (RoHS) Increased at 1000 for 1 to 2.25004.00010.72010.00010.000Directive 2002/SEC (End-1-Life Vehicles (EU) Directive).Directive 2003/SEC (RoHS) Directive).Directive 2003/SEC (RoHS) Directive).10.00015.4007.400-21.310.000Compliance with the above EU Directive and with EU Directive 2003/SEC (RoHS) Directive).EU Directive 2011/SEU (RoHS Recase Directive) and with EU5.91Total (mg)Chip (Die)% of total Weight3.18Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical let data.1.90Total (mg)Chip (Die)% of total Weight3.18Compliance with the above EU Directives has been complete basinNordela as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chinal subjection of analytical let data.1.90TotalDige (Die)Morichig compounds used by Microchig meetrical partical subj	Silver	7440-22-4	Die Attach	2.618	4.120	26,175		Zinc	7440-66-6	0.13	
Functionable Unification Resin 7280-84-4 Die Attach 0.172 0.172 0.174 0.175 0.174 0.175 0.174 0.175 0.174 0.175 0.174 0.175 0.174 0.175 0.174 0.175 0.174 0.175 0.174 0.175 0.174 0.175 0.174 0.175 0.174	Diester Resin	94-80-4	Die Attach	0.524	0.824	5,235		Phosphorous	7723-14-0	0.08	
Epox Rein 0003-36-5 Die Attach 0.087 0.137 073 5.49 (mod Teal No. Total Weight 3.49 Bloon 7.440-21-3 Chip (De) 3.180 5.002 31.00 0.000 40.002 100 <td>Functionalized Urethane Resin</td> <td>72869-86-4</td> <td>Die Attach</td> <td>0.175</td> <td>0.275</td> <td>1,745</td> <td></td> <td></td> <td>Total</td> <td>100.00</td> <td></td>	Functionalized Urethane Resin	72869-86-4	Die Attach	0.175	0.275	1,745			Total	100.00	
Epoxy Resin 13561/08-5 Die Attach 0.087 0.137 673 673 0200 Die Attach 75 Gold 7440/57.6 Wire Bond 3180 1210 1300 1210 1000 1210 1000 1210 1000 1210 1000 1210 1000 1210 1000 1210 1000 1210 1000 1210 1000 1210 1000 1210 1000 1210 1000 1210 1000 1210 1000	Epoxy Resin	9003-36-5	Die Attach	0.087	0.137	873	5.49	(mg) Total	Die Attach	% of Total Weight	3.49
Sileon 7440213 Chip (Dia) 3.180 5.000 31,800 12,800 <td>Epoxy Resin</td> <td>13561-08-5</td> <td>Die Attach</td> <td>0.087</td> <td>0.137</td> <td>873</td> <td>2200D</td> <td>Silver</td> <td>7440-22-4</td> <td>75</td> <td></td>	Epoxy Resin	13561-08-5	Die Attach	0.087	0.137	873	2200D	Silver	7440-22-4	75	
ColdThe colspan="2">Transmitted transmitted to the term of the colspan="2">Provide the term of the colspan="2">Provide term of term	Silicon	7440-21-3	Chip (Die)	3.180	5.005	31,800		Diester Resin	94-80-4	15	
Tn T40315 Putting on nearmal basis (ging). Main This aematida tai (SC Circl vin 22,8,900 45,001 28,8900 Epson (Resin 1, 2003-95.5) 3 Difference 0.1574 g Total Mass Totals Totals Total 100.000 157.04 g 100.00	Gold	7440-57-5	Wire Bond	1.210	1.905	12,100	Fun	ctionalized Urethane Resin	72869-86-4	5	
TOTALS: 100.000 157.400 1,000,000 Epoy Resin 1391.048.5 3 This 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 5.01 Total (mg) Chip Clieb %.60 Total Weight 3.18 Directive 2002/95/EC (RoH-LIE whichs (EU Directive). Export Resin 3.01 Total (mg) Chip Clieb %.60 Total Weight 3.18 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Image: Compliance With the above eu Directive and its above, the chemical substance is no crashibre reason to believe that the unavoidable inpurity concentration of the chemical substance is no crashibre reason to believe that the unavoidable inpurity concentration of the chemical substance is no crashibre reason to believe that the unavoidable inpurity concentration of the chemical substance is no crashibre reason to believe that the unavoidable inpurity concentration of the packing slip on the outer Tite State Sta	Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	28.590	45.001	285,900		Epoxy Resin	9003-36-5	3	
On 1574 g Total Mass Total Total 100.00 This semiconductor device and is homogeneus materials comply with EU Directive 2002/55/EC (RoHS Directive), EU Directive 3002/55/EC (RoHS Directive), EU Directive 3002/55/EC (RoHS Directive), EU Directive 3002/55/EC (End-of-Life Vehicles (ELV) Directive). 5.61 Total Chip (Die) %.of Total Weight 3.18 Compliance with the above EU Directive shas been verified via internal design controls, supplier declarations, and /or analytical test data. Doped Silicon 7.402.113 100.00 If 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 Incorporated SinoWeight and the threshold of regulatory concern for any regul			TOTALS:	100.000	157.400	1,000,000		Epoxy Resin	13561-08-5	3	
This semiconductor device and its homogenous materials comply with EU Directive 200295/EC (RoHS Directive), EU Directive 2011/85/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. If 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 incorporated's haveledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance. If any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Moding 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 http://ui.com/globale/mg/paged/terings/industrise/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 silp on the outer box and certain "reels" may be made from PVC plastic. Microchip Technology incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology incorporated cannot guaranterial suppliers. Information is for protected from disclosure as trade secrets and source or of thats the base restricts and source and or metarial accumated within silicon devices silicon of in the Mise perivided by sub- material suppliers. Information is for protected from disclosure as trade secrets and source or the secrets and source or of data in this form base been provided by raw material suppliers. Information is provided by and momental materials contained within silicon devices (silicon of in the finated parts): Microchip's quotations, sales oride and is subsidiaries		0.1574 a Ta	tal Mass						Total	100.00	-
chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Molding 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 thtp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ 1.90 (mg) Total Wire Bond % of Total Weight 1.21 1.90 (mg) Total to protection 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 and certain "reels" may be made from PVC plastic. 1.90 (mg) Total Weight 0.21 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 belied, as of the date listed in this form. Microchip Technology Incorporated significant toxic metals components Total 100.00 Total 400 (mg) Total Leagues provided by subcontract assemblers and course of data in this form because in the average weight of anticipated significant toxic metals components Total 100.00 Total 100.00 Total 100.00 Total 100.00 Total 100.00 Total 100.00 Total 450 (mg) Total Leagues for molecular toxic metals components Total 100.00 Total	Compliance with the above EU Directives has been verified via in If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date of	nternal design controls, s cal substance is NOT an of this document, there is	upplier declarations, and /or analytical test data. ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidabl	e and, to the b e impurity co	est of Microch	ip the		Doped Silicon	7440-21-3 Total	100 100.00	
The protective tubes in which the specific product is sinpped are made from polying chiefed (PCC) plastic. Window envelopes used to hold the packing silp on the outer box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in 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. 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 by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in this doclaration or horizon to the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products. Total 100.00 Total 100.00 Tot	chemical substance, if any, is not below the threshold of regulat Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	ory concern for any regu ability standard for plast astics/	latory scheme world-wide. ics. You can access the UL iQTM family of databas	ses to obtain a	a test report a	t	1.90	(mg) Total	Wire Bond	% of Total Weight	1.21
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 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. 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 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 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 in fuels at 150°C for 1 word Total Weight 28.59 Microchip Settions, sales order acknowledgement, and invoices. Microchip disclaims any duty to notify users of tupdates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or the party test reports (SGS) or of this Certificate of Compliance for semiconductor products. Total 100.00 Tin Total 100.00 Total United Tin Total 10	box and certain "reels" may be made from PVC plastic.	are made from polyvinyl	chioride (PVC) plastic. "Window envelopes" used	to hold the pa	CKING SIIP ON	the outer		Doped Gold	7440-57-5	100	
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 (mg) Total leads (pins) - Matte Tin / annealed at 150°C for 1	Microchip Technology Incorporated believes the information in t devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	his form concerning sub the best of its knowledge ccause it has been comp disclosure as trade secre s of the average weight o and non-metal materials	stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro led based on the ranges provided in Material Safe ts and some information may not have been prov f these parts and the average weight of anticipate contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ty Data Sheets ided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by entract assem oxic metals co s.	ductor ated cannot raw blers and omponents.			Total	100.00	
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 (SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	nty, express or implied, v ated and its subsidiaries voices.	vith respect to the information provided in this dec are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	45.00	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	28.59
	Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Content D ers' reliance on the infor vducts.	eclarations and shall not be liable for any damage mation in Material Content Declarations (MCD) or i	es, direct or in independent t	direct, conseq nird party test	uential or reports		Tin	7440-31-5	100.00	
							L		Total	100.00	-

Місвоснір			Termin Coj	nation Base A pper Alloy (C	Alloy: :u)		Package Hor 8.1 Electronics (nogeneous Materials: /e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: SO 18 (Lead) SOIC (Wide Outline - 300mil) (F2 / FJ)								e3
		"Contained In"	% Total	_		383 84	(mg) Total	Mold Compound	% of Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm		(,	
Silica, vitreous	60676-86-0	Mold Compound	67.830	326.262	678,300	EME-G600	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	23.510	48,878	4	Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Irade Secret	Mold Compound	4.888	23.510	48,878	-	Phenolic Resin	Irade 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		/ _	l otal	100.00	
Iron	7439-89-6	Lead Frame	0.247	1.187	2,468	50.51	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.962	2,000	194+AG	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	4	Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	2.706	5,625	4	Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.505	1,050	_	Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.271	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.126	263	3.61	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	36.075	75,000	8390A	Silver (Ag)	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.200	0.962	2,000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.013	12,500	Dig	lycidylether of bisphenol-F	54208-63-8	8	
		TOTALS:	100.000	481.000	1,000,000		Modified Amine	827-43-0	4	
	0.4810	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	ternal design contr	ols, supplier declarations, and /or analytical test data.	tons Recast D	frective) and	with EO	36.08	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date o substance, if any, is not below the threshold of regulatory conce	al substance is NO f this document, th rn for any regulator	T an intentional ingredient in the semiconductor device a ere is no credible reason to believe that the unavoidable y scheme world-wide.	and, to the bes impurity conc	at of Microchip entration of the	o he chemical			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamm. http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard for astics/	plastics. You can access the UL iQTM family of database	es to obtain a t	est report at		0.96	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped a and certain "reels" may be made from PVC plastic.	re made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used to	o hold the pacl	king slip on th	ne outer box		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in the devices in their original packing materials is true and correct to t guarantee the completeness and accuracy of data in this form be suppliers. Supplier information is often protected from disclosur suppliers. Information is provided only as estimates of the avera- estimates do not include trace levels of dopants, metals, and nor	his form concerning he best of its know cause it has been o e as trade secrets a ge weight of these n-metal materials co	g substances restricted by RoHS in Microchip Technolog ledge and belief, as of the date listed in this form. Microc compiled based on the ranges provided in Material Safety und some information may not have been provided by su parts and the average weight of anticipated significant to ontained within silicon devices (silicon IC) in the finished	y Incorporate hip Technolog Data Sheets p bcontract ass xic metals cor I parts.	d's semicond gy Incorporate provided by ra emblers and r nponents. Th	uctor ed cannot aw material raw material ese			Total	100.00	-
Microchip Technology Incorporated does not provide any warran warranties provided by Microchip Technology Incorporated and i Microchip's quotations, sales order acknowledgement, and invoi	ty, express or impl ts subsidiaries are ces.	ied, with respect to the information provided in this decla contained in Microchip's standard terms and conditions	aration. The ex of sale. These	cclusive, limit are provided	ed product in	6.01	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
	es to Material Cont	ent Declarations and shall not be liable for any damages	direct or indi	rect. consequ	ential or					
Microchip disclaims any duty to notity users of updates of chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor pro-	ers' reliance on the ducts.	information in Material Content Declarations (MCD) or in	dependent thi	rd party test r	eports		Tin	7440-31-5	100.00	
Microchip disclaims any duty to notity users of updates or chang otherwise, suffered by users or third parties as a result of the use SGS) or of this Certificate of Compliance for semiconductor pro-	ers' reliance on the ducts.	information in Material Content Declarations (MCD) or in	dependent thi	rd party test r	eports		Tin	7440-31-5 Total	100.00 100.00	

Semiconductor Device Type: SO 20 (Lead) SOIC (Wide Outline - 300mil) (65 / 65) "Contained In"				nation Base / pper Alloy (C	Alloy: :u)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			389 37	(mg) Total	Mold Compound	% of Total Weight	71 84
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	303.37	(ing) rotai	mola compound	/ot rotal weight	11.04
Silica, vitreous	60676-86-0	Mold Compound	61.064	330.967	610,640	EME-G600	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.400	23.849	44,002	4	Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.400	23.849	44,002	-	Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.760	9.540	17,601	-	Epoxy, Cresol Novolac	29090-82-2	2.45	
Calboli Black	7440 50 9		0.210	124.062	2,100	-	Caldon Diack	1333-00-4	0.30	
Copper	7440-50-8	Lead Frame	24.735	134.062	247,347			l otal	100.00	
Iron	7439-89-6	Lead Frame	0.608	3.298	6,084	140.32	(mg) Total	Lead Frame	% of Total Weight	25.89
Silver	7440-22-4	Lead Frame	0.493	2.673	4,932	194+AG	Copper	7440-50-8	95.54	
ZIIIC Bhosphorous	7440-00-0	Lead Frame	0.032	0.175	324	-	liton	7439-89-6	2.35	
Phospholous	7/23-14-0	Dia Attach	0.021	0.116	214	-	Zine	7440-22-4	1.91	
Epoxy resin	Trade Secret	Die Attach	0.252	0.369	680	-	Phosphorous	7722-14-0	0.13	
	Trade Secret	Die Attach	0.000	0.303	100	-	Filosphorous	1123-14-0	0.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.010	0.055	102	4.94	(mg) Total	Die Attech	100.00	0.24
Gamma-butyrolacione	30-40-0	Die Attach Chip (Die)	0.010	0.000	11.500	1.84	(mg) I otai	Die Attach	% of Total weight	0.34
Gold	7440-21-3	Wire Rend	0.100	0.233	1,500	8290	Silver Enoxy rosin	7440-22-4 Trada Saarat	74	
Tin	7440-31-5	Righting on external leads (sine) Matte Tin (appealed at 150%C for 1 hour	0.100	3.686	6,800	-	Metal ovide	Trade Secret	20	
1111	7440-31-3	Plating on external leads (pins) - Matternin/ annealed at 150°C for Thour	100 000	542 000	1 000 000	-	Gamma-butyrolactono	DE 49-0	3	
	0 5 4 2 0	n Tatal Masa	100.000	342.000	1,000,000		Gamma-butyrolacione	30-40-0 Total	100.00	
	0.5420	g lotal mass						iotai	100.00	
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	oly with EU Direction	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	6.23	Total (mg)	Chip (Die)	% of Total Weight	1.15
	iterinar accigit con						Bope Billoon	1110 21 0	100	
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date o chemical substance, if any, is not below the threshold of regulat Molding companyed, used by Microchip meet the UII 04 V0 (imm	cal substance is N of this document, t ory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide.	e and, to the be e impurity cor	est of Microch	nip i the			Total	100.00	
http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	astics/	r plastics. You can access the OL IQTM family of databas	ses to obtain a	a test report a	IC .	0.54	(mg) Total	Wire Bond	% of Total Weight	0.1
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Dope Gold	7440-57-5	100	
						1		Total	100.00	' I
Microchip Technology Incorporated believes the information in t devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate: These estimates do not include trace levels of dopants, metals, a	his form concerni the best of its kno ecause it has been disclosure as trad s of the average w and non-metal ma	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipated erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol- ty Data Sheets ided by subco d significant to finished parts	ted's semicor ogy Incorpora provided by ontract assem oxic metals co s.	nductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp nted and its subsid voices.	blied, with respect to the information provided in this dec iaries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	nited e provided	3.69	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.68
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Cor ers' reliance on th oducts.	itent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	s, direct or independent th	direct, consec hird party test	quential or t reports		Tin	7440-31-5	100.00	
						I		Total	100.00	,
						542,000				100 000

MICROCHIP Semiconductor Device Type	d) SOIC (Wide Outline - 300mil) (K3 / KS)	Termir Co _l	ation Base A oper Alloy (C	Alloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: e.g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3	
		"Contained In"	% Total			462.27	(mg) Total	Mold Compound	% of Total Weight	60.92
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	402.27	(ilig) i otal	word compound	/80t Total Weight	03.05
Silica, vitreous	60676-86-0	Mold Compound	59.356	392.933	593,555	EME-G600	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	100.00	-
Iron	7439-89-6	Lead Frame	0.634	4.194	6,336	178.48	(mg) Total	Lead Frame	% of Total Weight	26.96
Silver	7440-22-4	Lead Frame	0.514	3.400	5,136	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.034	0.223	337		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.022	0.147	222		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.326	2.155	3.256		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.088	0.583	880		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.013	0.087	132	1 '		Total	100.00	J
Gamma-butyrolactone	96-48-0	Die Attach	0.013	0.007	132	2.01	(mg) Total	Dio Attach	% of Total Weight	0.44
Silicon	7440 21 2	Chin (Dio)	2.010	12 206	20.100	2.31	(ing) rotai	7440.02.4		0.44
Gold	7440-21-3	Wire Bond	2.010	0.506	20,100	0290	Epoxy rosin	Trada Saarat	20	
Gulu	7440-57-5	Wile Bond	0.090	0.590	900		Epoxy resin	Trade Secret	20	
1 III	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	100.000	4.435	1 000 000			Trade Secret	3	
		TOTALS:	100.000	002.000	1,000,000		Gamma-butyrolactone	96-48-0	3	
	0.6620	g Total Mass						I otal	100.00	
Compliance with the above EU Directives has been verified via i	internal design cont						(5)	• • • •	•	
	-	rols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
f a chemical substance is absent from the list above, the chemi rechnology incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula	ical substance is NC of this document, th tory concern for any	rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable regulatory scheme world-wide.	and, to the be e impurity con	est of Microch centration of	iip the		Doped Silicon	7440-21-3 Total	100 100.00	
f a chemical substance is absent from the list above, the chemi Fechnology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula Wolding compounds used by Microchip meet the UL94 V0 flamm nttp://ul.com/global/eng/pages/offerings/industries/chemicals/p	ical substance is NC of this document, th tory concern for any nability standard for lastics/	rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable r egulatory scheme world-wide. plastics. You can access the UL iQTM family of databases	e and, to the be e impurity con ses to obtain a	est of Microch centration of test report a	hip the t	0.60	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.09
f a chemical substance is absent from the list above, the chemi Fechnology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula Wolding compounds used by Microchip meet the UL94 V0 flamr tip://ul.com/global/eng/pages/offerings/industries/chemicals/p The protective "tubes" in which the specific product is shipped tox and certain "reels" may be made from PVC plastic.	ical substance is NC of this document, ti tory concern for any nability standard for lastics/ are made from poly	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database winyl chloride (PVC) plastic. "Window envelopes" used	e and, to the be e impurity cor ses to obtain a to hold the pa	est of Microch centration of test report a cking slip on	hip the t the outer	0.60	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.09
f a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula Wolding compounds used by Microchip meet the UL94 V0 flamm tttp://ul.com/global/eng/pages/offerings/industries/chemicals/p The protective "tubes" in which the specific product is shipped sox and certain "reels" may be made from PVC plastic. Vicrochip Technology Incorporated believes the information in fevices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b naterial suppliers. Supplier information is provided only as estimate These estimates do not include trace levels of dopants, metals,	cal substance is NC of this document, th tory concern for any nability standard for lastics/ are made from poly this form concernin the best of its know eccause it has been disclosure as trade is of the average we and non-metal mate	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database winyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technoloc ledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe secrets and some information may not have been prov gipt of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	e and, to the b e impurity cor ses to obtain a to hold the pa ogy Incorporat chip Technol ty Data Sheets ided by subco a significant to finished parts	est of Microch icentration of itest report a cking slip on ed's semicon ogy Incorpore provided by ntract assem xic metals co	the the the outer ductor ated cannot raw blers and omponents.	0.60	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100 100.00	0.09
f a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula Wolding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/p The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form to material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals, Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpor in Microchip's quotations, sales order acknowledgement, and in	ical substance is NC of this document, tl itory concern for any nability standard for plastics/ are made from poly this form concernin the best of its know eccause it has been - disclosure as trade as of the average we and non-metal mate inty, express or imp ated and its subsidi ivoices.	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable or regulatory scheme world-wide. Plastics. You can access the UL iQTM family of database winyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technolo /edge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe secrets and some information may not have been prov ight of these parts and the average weight of anticipateder rials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this dec arises are contained in Microchip's standard terms and c	e and, to the be e impurity cor ses to obtain a to hold the pa orgy Incorporat ty Data Sheets ided by subco d significant to finished parts claration. The onditions of s	est of Microch icentration of itest report a cking slip on ed's semicon ggy Incorpora provided by ntract assem xic metals co - exclusive, lim ale. These are	the the outer ductor ated cannot raw blers and mponents. ited e provided	0.60	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00 % of Total Weight	0.09
f a chemical substance is absent from the list above, the chemi Fechnology Incorporated's knowledge and belief as of the date schemical substance, if any, is not below the threshold of regula Molding compounds used by Microchip meet the UL94 V0 flamr tip://ul.com/global/eng/pages/offerings/industries/chemicals/p The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in levices in their original packing materials is true and correct to yuarantee the completeness and accuracy of data in this form b naterial suppliers. Supplier information is provided only as estimate (hese estimates do not include trace levels of dopants, metals, Microchip Technology Incorporated does not provide any warra oroduct warranties provided by Microchip Technology Incorpor n Microchip is quotations, sales order acknowledgement, and ir Microchip disclaims any duty to notify users of updates or chan therwise, suffered by users or third parties as a result of the us SGS) or of this Certificate of Compliance for semiconductor pr	ical substance is NC of this document, tl itory concern for any mability standard foi lastics/ are made from poly this form concernin the best of its know because it has been disclosure as trade as of the average we and non-metal mate inty, express or imp ated and its subsidi ivoices. ges to Material Com sers' reliance on the oducts.	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database winyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technolo ledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe rescrets and some information may not have been prov ight of these parts and the average weight of anticipated rials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this dec aries are contained in Microchip's standard terms and c tent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or i	e and, to the be e impurity cor ses to obtain a to hold the pa ogy Incorporat chip Technolo ty Data Sheets ided by subco d significant to finished parts claration. The onditions of s s, direct or incondent th	est of Microch icentration of itest report a cking slip on ed's semicon gy Incorpora provided by ntract assem vic metals co exclusive, lim ale. These are lirect, conseq ird party test	the the t the outer ated cannot raw blers and omponents. ited e provided quential or reports	4.44	Ooped Silicon (mg) Total Doped Gold (mg) Total Tin	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	0.09
a chemical substance is absent from the list above, the chemi echnology Incorporated's knowledge and belief as of the date hemical substance, if any, is not below the threshold of regula Molding compounds used by Microchip meet the UL94 V0 flamr ittp://ul.com/global/eng/pages/offerings/industries/chemicals/p oox and certain "reels" in which the specific product is shipped iox and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in levices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b naterial suppliers. Supplier information is provided only as estimate 'hese estimates do not include trace levels of dopants, metals, Microchip Technology Incorporated does not provide any warrar roduct warranties provided by Microchip Technology Incorpor Microchip's quotations, sales order acknowledgement, and ir Microchip disclaims any duty to notify users of updates or char wherwise, suffered by users or third parties as a result of the us SGS) or of this Certificate of Compliance for semiconductor pr	ical substance is NC of this document, the tory concern for any mability standard for plastics/ are made from poly this form concerning the best of its know because it has been disclosure as trade as of the average we and non-metal mate inty, express or imp ated and its subsidi voices. Uges to Material Com- sers' reliance on the oducts.	rols, supplier declarations, and /or analytical test data. IT an intentional ingredient in the semiconductor device tere is no credible reason to believe that the unavoidable regulatory scheme world-wide. plastics. You can access the UL iQTM family of database winyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technoloc ledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe secrets and some information may not have been prov gipt of these parts and the average weight of anticipate orials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this dec aries are contained in Microchip's standard terms and c tent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or i	e and, to the be e impurity con ses to obtain a to hold the pa body incorporat chip Technolo ty Data Sheets ided by subco finished parts claration. The onditions of s s, direct or ino ndependent th	est of Microch icentration of cking slip on ed's semicon ogy Incorpore provided by ntract assem xic metals co exclusive, lim ale. These are lirect, conseq ird party test	t t the outer ated cannot raw blers and omponents. itted e provided uuential or reports	0.60	(mg) Total Doped Gold (mg) Total Tin	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 100.00	0.09

			Termiı Co	nation Base A pper Alloy (C	Alloy: Su)		Package Hom 8.1 Electronics (e	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	: SO & OI 28	(Lead) SOIC (Wide Outline - 300mil) (N3 / NN)								e3
Basia Sukatanaa		"Contained In" Sub-Component	% Total Weight	malnort		614.78	(mg) Total	Mold Compound	% ot Total Weight	79.8
	CAS Number	Mold Compound	67.920	522 562	679 200	EME C600	Silico vitroous	60676-96-0	95.00	ſ
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4 888	37 655	48 878	LINE-GOOD	Enoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL ShO3, 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	1	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		odrborr Bidok	Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	1 901	2 468	90.90	(mg) Total	Load Eramo	% of Total Woight	10.5
Silvor	7400 00 0	Load Frame	0.200	1.501	2,400	104.40	(iiig) Totai	7440 50 8		10.5
Zino	7440-22-4	Lead Frame	0.200	0.101	2,000	194+AG	Copper	7440-50-8	95.54	
ZIIU	7440-00-0	Lead Frame	0.013	0.101	131	-	Iron	7439-89-6	2.30	
Phosphorous Ciluar (A.z.)	7723-14-0	Lead Frame	0.009	0.067	8/	-	Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	4.334	5,625	-	Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.809	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.433	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.202	263	5.78	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	57.780	75,000	8390A	Silver (Ag)	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.200	1.541	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	9.630	12,500	Dig	lycidylether of bisphenol-F	54208-63-8	8	
		TOTALS:	100.000	770.400	1,000,000		Modified Amine	827-43-0	4	
	0 7704	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 con	trols, supplier declarations, and /or analytical test data.		Bircouvey un		57.78	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date o chemical substance, if any, is not below the threshold of regulate	cal substance is No f this document, t ory concern for an	OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the b le impurity coi	est of Microch acentration of	nip the		U	Total	100.00	U
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard fo astics/	r plastics. You can access the UL iQTM family of databa	ses to obtain a	a test report a	t	1.54	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
								Total	100.00	L
Microchip Technology Incorporated believes the information in t devices in their original packing materials is true and correct to f guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metals, a	his form concerning the best of its know ecause it has been disclosure as trade s of the average we and non-metal mat	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ety Data Sheets vided by subco d significant to e finished parts	ed's semicon ogy Incorpora provided by ontract assem oxic metals co s.	nductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and inv	nty, express or imp ited and its subsid voices.	plied, with respect to the information provided in this de laries are contained in Microchip's standard terms and o	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	9.63	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor pro	ges to Material Cor ers' reliance on the ducts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or in independent t	direct, consec hird party test	quential or reports		Tin	7440-31-5	100.00	
								Total	100.00	- 1
						770 400				400.000

	Semiconductor Device Type: SM 08 (Lead) SOIJ (Small Outline-208 mil) (C3) "Contained In"				Alloy: :u)		Package Homog 8.1 Electronics (e.g	geneous Materials: . pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Ty	pe: SM 08 (Lead)) SOIJ (Small Outline-208 mil) (C3)	% Total	1	1					
Desis Substance		Sub-Component	% lotal Weight			99.27	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight 60.254	mg/part	ppm	CO 02000M	Cilian vitroouo	60676 96 0	-	
Silica, Villeous	Trada Sacrat	Mold Compound	6 1 2 1	7.614	61 207	5G-8300GM	Enory Posin	Trado Socrat	7.67	
Deposite Resin	Trade Secret	Mold Compound	4.079	7.014 5.072	40 779		Phonolic Rosin	Trade Secret	5.11	
Carbon Plack	1222 96 4	Mold Compound	4.078	0.209	40,770		Corbon Block	1222.96.4	0.31	
Calboli Black	7440 50 9		10.0247	12,470	2,474		Carbon Black	1333-60-4	0.31	
Copper	7440-50-6	Lead Frame	0.047	12.479	100,314	10.00	() = ()	i otai	100.00	105
libit	7439-69-6	Lead Frame	0.247	0.307	2,400	13.06	(mg) I otal	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.249	2,000	CDA194+Ag	Copper	7440-50-8	95.54	
ZINC	7440-66-6	Lead Frame	0.013	0.016	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.011	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4 12561.09.5	Die Attach	0.563	0.700	5,625		Zinc	7440-66-6	0.13	
Midailled Epoxy Resin	13301-06-5	Die Attach	0.105	0.131	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.070	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.033	263	0.93	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	9.330	75,000	8390A	Silver (Ag)	7440-22-4	75	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.244	1,965		Modified Epoxy Resin	13561-08-5	14	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.004	35	Di	glycidylether of bisphenol-F	54208-63-8	8	
liń	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	4	
		TOTALS:	100.000	124.400	1,000,000			Total	100.00	
	0.1244	g Total Mass				9.33	Total (mg)	Chip (Die)	% of Total Weight	7.5
This semiconductor device and its homogenous materials co Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)	mply with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) an	d with EU		Doped Silicon	7440-21-3	100	
Compliance with the shows EU Directives has been verified vi	a internal dealers as n	trale cumplicy declarations, and fay analytical test data						Total	100.00	IJ
If a chemical substance is absent from the list above, the che	mical substance is N	OT an intentional ingredient in the semiconductor device	and, to the be	est of Microcl	nip		()= ()	Wire Bond		
chemical substance, if any, is not below the threshold of regu	latory concern for an	y regulatory scheme world-wide.	e impurity con	icentration of	the	0.25	(mg) Total	palladium coated copper (CuPd)	% of Total Weight	0.2
Molding compounds used by Microchip meet the UL94 V0 flar http://ul.com/global/eng/pages/offerings/industries/chemicals	nmability standard fo s/plastics/	r plastics. You can access the UL iQTM family of databas	ses to obtain a	i test report a	t		Copper	7440-50-8	98	
The protective "tubes" in which the specific product is shippe box and certain "reels" may be made from PVC plastic.	ed are made from pol	vvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Palladium	7440-05-3	2	
								Total	100.00	-
Microchip Technology Incorporated believes the information	in this form concerning	ng substances restricted by RoHS in Microchip Technolo	ogy Incorporat	ed's semicor	ductor					
devices in their original packing materials is true and correct	to the best of its know	wledge and belief, as of the date listed in this form. Micro	chip Technol	ogy Incorpor	ated cannot					
guarantee the completeness and accuracy of data in this form	n because it has been	compiled based on the ranges provided in Material Safe	ty Data Sheets	provided by	raw					
material suppliers. Supplier information is often protected fro	om disclosure as trade	e secrets and some information may not have been prov	ided by subco	ntract assem	blers and					
raw material suppliers. Information is provided only as estimated	ates of the average we	eight of these parts and the average weight of anticipated	significant to	xic metals co	omponents.					
These estimates do not include trace levels of dopants, metal	s, and non-metal mat	erials contained within silicon devices (silicon IC) in the	finished parts							
			-							
Microchin Technology Incorporated does not provide any way	ranty express or imr	lied with respect to the information provided in this dec	laration The	ovclusivo lin	vited			Plating on external		
needuct warrantics provided by Microshin Tochnology Incorp	orated and its subsid	iarias are contained in Microshin's standard terms and a	anditions of c	alo Thoso ar	n provided	4.50	(leads (pins) - Matte Tin	0/ of Total Mainte	4.05
in Microshin's sustations, calos and a solve wild as well a solve and a solve	linuelees	iaries are contained in Microcinp's standard terms and c	onunions or s	ale. These al	e provideu	1.50	(mg) i otai	/ annealed at 150°C for 1	% of Total weight	1.20
in microchip's quotations, sales order acknowledgement, and	invoices.							hour		
Microchip disclaims any duty to notify users of updates or ch	anges to Material Con	itent Declarations and shall not be liable for any damage	s, direct or inc	direct, conse	quential or					
otherwise, suffered by users or third parties as a result of the	users' reliance on the	e information in Material Content Declarations (MCD) or i	ndependent th	nird party tes	t reports		Tin	7440-31-5	100.00	
(SGS) or of this Certificate of Compliance for semiconductor	products.									
							<u> </u>	Tatal	100.00	ן
								I otai	100.00	
						124.40)			100.000

Basic Stutance CAS Number Contained in % Total Multiply ppm Basid (mg) Task Number Contained in Study Study <th>Semiconductor Device Type:</th> <th colspan="4">Semiconductor Device Type: S2AF 08 (Lead) SOIJ/SOIC .208in (4B) "Contained In"</th> <th>Alloy: Cu)</th> <th></th> <th>Package Homo 8.1 Electronics (e.</th> <th>geneous Materials: g. pc boards, display:</th> <th>5)</th> <th>JEDEC 97 Product Marking and/or Pkg. Labeling e4</th>	Semiconductor Device Type:	Semiconductor Device Type: S2AF 08 (Lead) SOIJ/SOIC .208in (4B) "Contained In"				Alloy: Cu)		Package Homo 8.1 Electronics (e.	geneous Materials: g. pc boards, display:	5)	JEDEC 97 Product Marking and/or Pkg. Labeling e4
List be building CAS Window Our Controlution Provide the provide of			"Contained In"	% Total			89.96	(mg) Total	Mold Compound	%ot Total Weight	66.29
Book No. Total Conclusion A 100 Conclusion A 100 Conclusion Note of Conclusion Precede Research No. 2000 (Local Notable Conclusion Notable Conclusion) 2000 (Local Notable Conclusion Notable Conclusion) 1000 (Local Notable Conclusion) 1000 (L	Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm	EME CZZOHCD	Cilico vitroguo	60676 96 0	95.00	
Product Near (No. 87 (C) 3502, 362, 362, 364, 364, 376, 376, 376, 376, 376, 376, 376, 376	Enovy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4 060	70.402 5.510	40 603	EWE-G//ORCD	Enow Resin	Trade Secret	6.13	
Energy Clear Notation 2800 (92.2) Multicity Company 16.23 2.24 16.24 Part of the state o	Phenolic Resin (No Br / CL SbQ3, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5 510	40,603		Phenolic Resin	Trade Secret	6.13	
Calebox Black 1333.69.4 Medi Consistent 0 120 120 <t< td=""><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>Mold Compound</td><td>1.624</td><td>2.204</td><td>16,241</td><td></td><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td><td></td></t<>	Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.624	2.204	16,241		Epoxy, Cresol Novolac	29690-82-2	2.45	
Copper 740-00-0 Lead Finite 20.50 36.71 56.70.0 17.72 Total Finite 19.70 Biter 740-09-04 Lead Finite 0.653 0.653 0.624 0.71 6.324 77.40.00.4 59.54 19.72 Biter 740-09-04 Lead Finite 0.055 0.071 6.324 77.40.00.4 59.54 19.92 Pining Data 77.60.01 Lead Finite 0.055 0.031 22.92 19.92	Carbon Black	1333-86-4	Mold Compound	0.199	0.270	1,989		Carbon Black	1333-86-4	0.30	
Inn 7269-04 Lead Time 0.53 0.78 5.23 0.77 Form Tail Lead Tame 5.23 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 5.237 0.77 0.78 </td <td>Copper</td> <td>7440-50-8</td> <td>Lead Frame</td> <td>26.540</td> <td>36.015</td> <td>265,403</td> <td></td> <td></td> <td>Total</td> <td>100.00</td> <td></td>	Copper	7440-50-8	Lead Frame	26.540	36.015	265,403			Total	100.00	
Strate 7440.24 Lead Finite 0.252 0.718 5.202 Photoma 7721-16.0 Lead Finite 0.003 0.031 0.221 1.024 1.021 1.021 1.022 1.021	Iron	7439-89-6	Lead Frame	0.653	0.886	6,528	37.70	(mg) Total	Lead Frame	% of Total Weight	27.78
Bitser T440224 Lead Fame 0.529 0.718 5.202 (PP) Copyet 740.69.08 5.54 Bitser 747.69.04 Lasd Fame 0.015 0.216 4.01 740.02.4 0.00 0.015 0.216 740.02.4 0.015 740.02.4 0.015 740.02.4 0.015 740.02.4 0.015 740.02.4 0.015 740.02.4 0.015 740.02.4 0.015 740.02.4 0.015 740.02.4 0.015 740.02.4 0.015 740.02.4 0.01							C194 + Ag				
2/20 7440-86 Lead Frame 0.025 0.037 247 000 0.025 0.037 247 Binory resin Trade Secret Dia Attan 0.001 <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.529</td> <td>0.718</td> <td>5,292</td> <td>(PPF)</td> <td>Copper</td> <td>7440-50-8</td> <td>95.54</td> <td></td>	Silver	7440-22-4	Lead Frame	0.529	0.718	5,292	(PPF)	Copper	7440-50-8	95.54	
Photophonus 7723-14-0 Lead Frame 0.023 0.024 0.024 0.024 0.024 0.025 0.024 0.025 0.025 0.026 0.027 0.026 0.027 0.026 0.027 0.026 0.027 0.026 0.027 0.026 0.027 0.026 0.027 0.026 0.027 0.026 0.027 0.026 0.027 0.026 0.02 0.027 0.026 0.02	Zinc	7440-66-6	Lead Frame	0.035	0.047	347		Iron	7439-89-6	2.35	
Silver Equation Total Scient Operation Marked and Marked and 	Phosphorous	7723-14-0	Lead Frame	0.023	0.031	229		Silver	7440-22-4	1.91	
Epopy resin Trade Secret Die Attach 0.064 400 Plotgerous 7724-16 0.08 Gimme Durydlatione 95480 Die Attach 0.007 0.003 66 000 100.000 100.000 1	Silver	7440-22-4	Die Attach	0.163	0.221	1,628		Zinc	7440-66-6	0.13	
Metal oxide Trade Search Out Output Output <th< td=""><td>Epoxy resin</td><td>Trade Secret</td><td>Die Attach</td><td>0.044</td><td>0.060</td><td>440</td><td></td><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td><td></td></th<>	Epoxy resin	Trade Secret	Die Attach	0.044	0.060	440		Phosphorous	7723-14-0	0.08	
Gamma butypications 96-49-0 De Attach 0.007 0.009 66 0.30 fred Teal Die Attach 5/07 9/12 Gamma butypications 7440.271-5 Printig on Willing Bodd 0.150 0.234 1.500	Metal oxide	Trade Secret	Die Attach	0.007	0.009	66			Total	100.00	
Silion 7440-21-3 Che (De) 6.410 7.241 7.241 7.211	Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.009	66	0.30	(mg) Total	Die Attach	% of Total Weight	0.22
Gold 7440-07-5 Wire Bond 0.150 0.204 1.600 Nickel 7460-07-3 Pating on extential loss (presi/PPP) 0.001 0.010 75 Gold 7460-07-3 Pating on extential loss (presi/PPP) 0.001 0.010 75 Gold 7460-07-3 Pating on extential loss (presi/PPP) 0.001 0.010 75 Gold 7460-07-3 Pating on extential loss (presi/PPP) 0.001 0.010 75 Charna durycatche 7460-07	Silicon	7440-21-3	Chip (Die)	5.410	7.341	54,100	8290	Silver	7440-22-4	74	
Nicket 7440 02:0 Plating on external lasis (pms)(PPP) 0.142 0.101 7.44 Gold 7.440 57.5 Plating on external lasis (pms)(PPP) 0.001 0.000 8 Text 100.00 5.01 0.000 8 Text 100.00 5.01 100.000 8 Text 100.00 5.01 100.000 8 Text 100.00 5.01 100.000 7.44 4.10 100.000 5.01 100.00 5.01	Gold	7440-57-5	Wire Bond	0.150	0.204	1,500		Epoxy resin	Trade Secret	20	
Paladum 74400573 Palago neternal leads (pms)(PPP) 0.001 75 Camma supprised/pactation 96:49:0 3 Gold 7440575 Palago neternal leads (pms)(PPP) 0.001 75 Teal 100.00 75 Teal 100.00 73 100.00<	Nickel	7440-02-0	Plating on external leads (pins)(PPF)	0.142	0.192	1,418		Metal oxide	Trade Secret	3	
God Principo ocentral leads (pins)(PPF) 0.001<	Palladium	7440-05-03	Plating on external leads (pins)(PPF)	0.008	0.010	75		Gamma-butyrolactone	96-48-0	3	ļ
TOTALS: 100.00 135.70 1,000,00 7.34 Total (PDip) % of Total Weight 5.41 Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Directive 2002/65/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/65/EC (RoH-Cife Vehicles (ELV) Directive). Total Directive 2002/65/EC (RoH-Cife Vehicles (ELV) Directive). Science 100.00 Total Wire Bood % of Total Weight 0.15 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 0.20 (mg) Total Wire Bood % of Total Weight 0.15 Fechnology incorporated's knowkee gan belide as to orecifile reson to believe that the unavoidable impurity concentration of the the thereshold of regulatory concern for any regulatory scheme world-wide. 0.20 (mg) Total Wire Bood % of Total Weight 0.15 Wolding compounds used by Microchip meet the ULV4 V0 fammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at thr/1/LU complicable/Balengapase/Berline/Berl	Gold	7440-57-5	Plating on external leads (pins)(PPF)	0.001	0.001	8			Total	100.00	
Out357 g Total Mass Deped Silicon 7440-21-3 100 This semiconduct divice and its homogeneous materialis computy with EU Directive. 2002/95/EC (2hd-5f Life Vehicles (ELV) Directive). 0.20 (mg) Total Wire Bond %.of Total Weight 0.15 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 0.20 (mg) Total Wire Bond %.of Total Weight 0.15 Chenhology Incorporated's knowledge and belief as the 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 no credible reason to believe that the unavoidable impurity concentration of the chemical substance is no credible reason to believe that the unavoidable impurity concentration of the chemical substance is absent from PVC plastic. You can access the UL IOTM family of databases to obtain a test report at thtp://LI.com/global/eng/pages/offerings/industries/chemicals/plastics/ Doped Gidd 7440-57-5 100.00 Vietoreline "twees" may be made from PVC plastic. "Window envelopes" used to hold the packing slip on the outer and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Tachnology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Tachnology Incorporated paints. Sepplet motion in this form concerning substances restricted by RoHS in Microchip Tachnology Incorporated paints of the average weight of the date listed in this form. Microchip Tachnology Incorporated paints.			TOTALS:	100.000	135.700	1,000,000	7.34	Total (mg)	Chip (Die)	% of Total Weight	5.41
This 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 Directives and seem verified via internal design controls, supplier declarations, and /or analytical test data. 1 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 incorporated showledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the Menical substance, if any, in no bed/or the trieshoft of regulatory contern for any regulatory scheme workf-wide. Wolding compounds used by Microchip met the UL94 V0 Immability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at try/ul.com/globaleng/pages/cffree/free/free/free/free/free/free/fr		0.1357 a	Total Mass					Doped Silicon	7440-21-3	100	
If 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 Deped Gold 7440-57-5 100 Technology 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 hemical substance. If any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Total Deped Gold 7440-57-5 100 The protection" 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 to 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 semiconductor from disclosure as trade secrets and some information is provided by subcontract assemblers on the information is often protected from disclosure as trade secrets and some information any on thave been provided by subcontract assemblers or worled with in slicon devices (slicin IC) in the finished parts. 0.20 (mg) Total Plasting on external leads (pins)(PPF) % of Total Weight 0.15 Wickel 7440-02-0 94.50	Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via inte	ernal design controls,	supplier declarations, and /or analytical test da	ita.	ast Directive) and with EO	0.20	(mg) Total	Wire Bond	% of Total Weight	0.15
Molding 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 thtp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ Total 100.00 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 of ginal 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 and 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 any not have been provided by subcontract assemblers. 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 static disconder semiconductor of duations is othen protected from disclosure as tracted are contained in Microchip Technology Incorporated significant toxic metals complients. 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 inticipated significant toxic metals compliend. In this form concerning multid, with respect to the information provided in Microchip Technology Incorporated disclosure as tracted. In Microchip Technology Incorporated and its subsidiaries are contained in Microchip S standard terms and conditions of sale. These are vovided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip S standard terms and conditions of sale. These are vovided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip S standard terms and conditions of sale. These are vovided in Microchip S quotations, sales order achnowledgement, and invoices. <td>f a chemical substance is absent from the list above, the chemical Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulator</td> <td>substance is NOT an his document, there i y concern for any reg</td> <td>intentional ingredient in the semiconductor de is no credible reason to believe that the unavoir ulatory scheme world-wide.</td> <td>evice and, to the</td> <td>e best of Mic concentratio</td> <td>rochip n of the</td> <td></td> <td>Doped Gold</td> <td>7440-57-5</td> <td>100</td> <td></td>	f a chemical substance is absent from the list above, the chemical Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulator	substance is NOT an his document, there i y concern for any reg	intentional ingredient in the semiconductor de is no credible reason to believe that the unavoir ulatory scheme world-wide.	evice and, to the	e best of Mic concentratio	rochip n of the		Doped Gold	7440-57-5	100	
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. Plating on external leads (pins)(PPF) % of Total Weight 0.15 Wicrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated as anot 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 ware made from polytice information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers in draw material suppliers. Suppliers. Suppliers Muterial Safety Data Sheets provided by Microchip Technology Incorporated does not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. Nickel Palladium 7440-02-0 94.50 Wicrochip 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 rovided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are are set of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test Gold 7440-05-03 5.00 Wicrochip Section Gos in the provide to subsidiaries are a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test Gold 744	Molding compounds used by Microchip meet the UL94 V0 flammat http://ul.com/global/eng/pages/offerings/industries/chemicals/plas	bility standard for plas tics/	stics. You can access the UL iQTM family of dat	abases to obta	in a test repo	ort at			Total	100.00	
Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor fevices 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 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. 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. Wicrochip 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 routed by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are routed 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 eports (SGS) or of this Certificate of Compliance for semiconductor products.	The protective "tubes" in which the specific product is shipped are box and certain "reels" may be made from PVC plastic.	e made from polyviny	I chloride (PVC) plastic. "Window envelopes" u	sed to hold the	packing slip	on the outer	0.20	(mg) Total	Plating on external leads (pins)(PPF)	% of Total Weight	0.15
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. Wicrochip 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 eports (SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated believes the information in thi devices in their original packing materials is true and correct to the cannot guarantee the completeness and accuracy of data in this fo raw material suppliers. Supplier information is often protected fror and raw material suppliers. Information is provided only as estima components. These estimates do not include trace levels of dopan	s form concerning su best of its knowledg rm because it has be n disclosure as trade tes of the average we ts, metals, and non-m	bstances restricted by RoHS in Microchip Tech e and belief, as of the date listed in this form. A en compiled based on the ranges provided in N secrets and some information may not have be ight of these parts and the average weight of ar netal materials contained within silicon devices	nology Incorpo Microchip Techn laterial Safety E een provided by nticipated signi (silicon IC) in f	prated's sem nology Incor Data Sheets p y subcontrac ficant toxic r the finished	iconductor porated provided by t assemblers netals parts.	;	Nickel	7440-02-0	94.50	
Vicrochip 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 (SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated does not provide any warranty product warranties provided by Microchip Technology Incorporate provided in Microchip's quotations, sales order acknowledgement,	r, express or implied, d and its subsidiaries and invoices.	with respect to the information provided in this are contained in Microchip's standard terms a	declaration. T nd conditions o	he exclusive of sale. Thes	, limited e are		Palladium	7440-05-03	5.00	
Testal 100.00	Microchip disclaims any duty to notify users of updates or change or otherwise, suffered by users or third parties as a result of the us reports (SGS) or of this Certificate of Compliance for semiconduct	s to Material Content sers' reliance on the in or products.	Declarations and shall not be liable for any dam nformation in Material Content Declarations (MC	ages, direct or CD) or independ	indirect, co dent third pa	nsequential rty test		Gold	7440-57-5	0.50	
							1		Total	100.00	

Semiconductor Device Type: CB and NB and TT 03 (Lead) SOT-23 (C6 / CV / M7) Termination Base Alloy Copper Alloy (Cu)							Package Hom 8.1 Electronics (e	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total	T				1		
Basic Substance	CAS Number	Sub-Component	Weight	ma/nart	nnm	6.62	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica vitreous	60676-86-0	Mold Compound	67.830	5.630	678 300	EME-G600	Silica vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine No diantimony trioxide)	Trade Secret	Mold Compound	4 888	0.406	48 878	LINE-0000	Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.406	48.878	1	Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.162	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.020	2,394	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	0.833	100,314	1		Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.020	2,468	0.87	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.017	2,000	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.001	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.047	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.009	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.005	563	1		Total	100.00	,
Modified Amine	827-43-0	Die Attach	0.026	0.002	263	0.06	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	0.623	75.000	8390A	Silver (Ag)	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.200	0.017	2,000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.104	12,500	Dig	lycidylether of bisphenol-F	54208-63-8	8	
		TOTALS:	100.000	8.300	1,000,000	-	Modified Amine	827-43-0	4	
	0 0083	a Total Mass						Total	100.00	4
				,		0.62	Total (mg)	Chip (Die)	% of Total Weight	7.5
pliance with the above EU Directives has been verified via in	nternal design con	trols, supplier declarations, and /or analytical test data.		·		0.62	Total (mg) Doped Silicon	Chip (Die) 7440-21-3	% of Total Weight	7.5
npliance with the above EU Directives has been verified via i chemical substance is absent from the list above, the chemi hnology Incorporated's knowledge and belief as of the date nical substance, if any, is not below the threshold of regulat	nternal design con cal substance is No of this document, t ory concern for an	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the b le impurity co	est of Microcl	lip the	0.62	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	7.5
npliance with the above EU Directives has been verified via i chemical substance is absent from the list above, the chemi hnology Incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regulat ling compounds used by Microchip meet the UL94 V0 flamm ://ul.com/global/eng/pages/offerings/industries/chemicals/pl	nternal design con cal substance is No of this document, t ory concern for an nability standard fo astics/	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa	e and, to the b le impurity cor ses to obtain a	est of Microci ncentration of a test report a	hip the t	0.62	Total (mg) Doped Silicon (mg) Total	Chip (Die) 7440-21-3 Total Wire Bond	% of Total Weight 100 100.00 % of Total Weight	0.2
npliance with the above EU Directives has been verified via i chemical substance is absent from the list above, the chemi hnology incorporated's knowledge and belief as of the date of mical substance, if any, is not below the threshold of regular ding compounds used by Microchip meet the UL94 V0 flamm ://ul.com/global/eng/pages/offerings/industries/chemicals/pl protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic.	nternal design con cal substance is No of this document, t ory concern for an nability standard fo astics/ are made from pol	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa yvinyl chloride (PVC) plastic. "Window envelopes" used	e and, to the b le impurity cor ses to obtain a to hold the pa	est of Microcl ncentration of a test report a ncking slip on	the the t	0.62	Total (mg) 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	0.2
npliance with the above EU Directives has been verified via i chemical substance is absent from the list above, the chemi hnology incorporated's knowledge and belief as of the date e mical substance, if any, is not below the threshold of regular ding compounds used by Microchip meet the UL94 V0 flamn ://ul.com/global/eng/pages/offerings/industries/chemicals/pi protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in i ces in their original packing materials is true and correct to rantee the completeness and accuracy of data in this form b rial suppliers. Information is provided only as estimate se estimates do not include trace levels of dopants, metals,	nternal design con cal substance is Nr of this document, t ory concern for an nability standard for astics/ are made from pol this form concerni the best of its kno ccause it has been disclosure as trad s of the average w and non-metal mat	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa yvinyl chloride (PVC) plastic. "Window envelopes" used ng substances restricted by RoHS in Microchip Technol Wedge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been prov eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	e and, to the b le impurity col ses to obtain a to hold the pa ogy Incorpora ochip Technol ty Data Sheets rided by subcc d significant tt finished parts	est of Microci ncentration of a test report a acking slip on ted's semicor ogy incorpor s provided by ontract assem oxic metals co s.	hip the t the outer ductor ted cannot raw blers and mponents.	0.62	Total (mg) Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2
npliance with the above EU Directives has been verified via i chemical substance is absent from the list above, the chemi hnology Incorporated's knowledge and belief as of the date mical substance, if any, is not below the threshold of regulat ding compounds used by Microchip meet the UL94 V0 flamn ://ul.com/global/eng/pages/offerings/industries/chemicals/pi protective "tubes" in which the specific product is shipped and 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 to aratee the completeness and accuracy of data in this form be araterial supplier. Information is provided only as estimate se estimates do not include trace levels of dopants, metals, ochip Technology Incorporated does not provide any warrar luct warranties provided by Microchip Technology Incorpora- icrochip's quotations, sales order acknowledgement, and in	nternal design con cal substance is N of this document, t ory concern for an nability standard for astics/ are made from pol this form concerni the best of its know cause it has been disclosure as trad s of the average w and non-metal mat nty, express or imp ted and its subsid voices.	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa yvinyl chloride (PVC) plastic. "Window envelopes" used ng substances restricted by RoHS in Microchip Technol Wedge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been pro eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the puled, with respect to the information provided in this de laries are contained in Microchip's standard terms and o	e and, to the b le impurity con ses to obtain a to hold the pa ogy Incorpora ochip Technol ty Data Sheet: dided by subcc d significant tu finished parts claration. The conditions of s	est of Microcl accentration of a test report a ted's semicor ogy Incorpora s provided by ntract assem oxic metals co a. exclusive, lim tale. These ar	t the outer ductor ted cannot raw blers and mponents. ited e provided	0.62	Total (mg) 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) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 100 % of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2
npliance with the above EU Directives has been verified via i chemical substance is absent from the list above, the chemi hnology Incorporated's knowledge and belief as of the date i mical substance, if any, is not below the threshold of regular ding compounds used by Microchip meet the UL94 V0 flamn ://ul.com/global/eng/pages/offerings/industries/chemicals/pi protective "tubes" in which the specific product is shipped and certain "reels" may be made from PVC plastic. ochip Technology Incorporated believes the information in ices in their original packing materials is true and correct to crantee the completeness and accuracy of data in this form be rial suppliers. Supplier information is provided only as estimate se estimates do not include trace levels of dopants, metals, ochip Technology Incorporated does not provide any warrat fuct warranties provided by Microchip Technology Incorpora- icrochip's quotations, sales order acknowledgement, and in ochip disclaims any duty to notify users of updates or cham, wise, suffered by users or third parties as a result of the s) or of this Certificate of Compliance for semiconductor pro-	nternal design con cal substance is Nt of this document, t ory concern for an ability standard for astics/ are made from pol this form concerni the best of its knoi ccause it has been disclosure as trad s of the average w and non-metal mat nty, express or imp ted and its subsid voices. ges to Material Cor ers' reliance on the oducts.	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa yvinyl chloride (PVC) plastic. "Window envelopes" used ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe a secrets and some information may not have been prov- bight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the solide, with respect to the information provided in this de iaries are contained in Microchip's standard terms and of them to be and shall not be liable for any damagre e information in Material Content Declarations (MCD) or	e and, to the b le impurity con ses to obtain a to hold the pa ogy Incorpora ochip Technol vided by subco d significant to finished parts claration. The conditions of s	est of Microcl ncentration of a test report a acking slip on ted's semicor ogy Incorpor s provided by ontract assem ontract assem ontract assem seclusive, lim sale. These ar direct, consee hird party test	t t the outer ted cannot raw blers and provided a provided guential or reports	0.62	Total (mg) Doped Silicon (mg) Total Doped Gold (mg) Total Tin	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 7440-31-5	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2

	5	Termin Co	nation Base / pper Alloy (C	Alloy: Cu)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling	
Semiconductor Device Type	Cland OI C	5 (Lead) SO1-23A (M7)	0/ T / I		1					es
Booio Substance		"Contained In" Sub-Component	% Total Weight	malaart		9.42	(mg) Total	Mold Compound	% ot Total Weight	63.21
Silice vitroue	CAS Number	Mold Compound	52 720	nig/part	527 295	EME C600	Silico vitroous	60676.96.0	95.00	1
Enow Resin (No bromine, No diantimony triovide)	Trade Secret	Mold Compound	3 872	0.577	38 716	EWIE-GOUU	Enovy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL ShO3 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		Enoxy 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	4.020	270 371		Odiboli black	Total	100.00	1
Iron	7/30-80-6	Lead Frame	0.665	0.000	6 651	4.22	(mg) Total	Load Frame	% of Total Waight	20.2
Silver	7433-03-0	Lead Frame	0.000	0.033	5 201	4.22	(ilig) Total			20.3
 Zine	7440-22-4	Lead Frame	0.539	0.060	5,391	194+AG	Copper	7440-50-8	95.54	•
ZIIU	7440-00-0	Lead Frame	0.035	0.005	304		liton	7439-89-6	2.35	•
Phosphorous Matal avida	7723-14-0 Trada Saarat	Lead Frame	0.023	0.003	233		Silver	7440-22-4	1.91	
	Trade Secret	Die Attach	0.045	0.126	0,440		Zinc	7440-66-6	0.13	•
Epoxy resins	Trade Secret	Die Attach	0.645	0.126	0,440		Phosphorous	7723-14-0	0.08	J
Giycol ethers	Trade Secret	Die Attach	0.640	0.095	6,400			lotal	100.00	
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	8006NS	Metal oxide	Trade Secret	33	
Gold	7440-57-5	Wire Bond	0.740	0.110	7,400		Epoxy resins	Trade Secret	33	
Lin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.020	0.301	20,200		Glycol ethers	Trade Secret	25	
		TOTALS:	100.000	14.900	1,000,000		Curing / Hardener	I rade Secret	9	
HANA / Material compilation	0.0149	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ly with EU Directi	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) an	d with EU	0.47	Total (mg)	Chip (Die)	% of Total Weight	3.17
Compliance with the above EU Directives has been verified via in	iternal design cor	trois, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulate	al substance is N f this document, f ory concern for ar	OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the b le impurity coi	est of Microcl	hip f the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard fo astics/	or plastics. You can access the UL iQTM family of databa	ises to obtain a	a test report a	ıt	0.11	(mg) Total	Wire Bond	% of Total Weight	0.74
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	are made from po	yvinyl chloride (PVC) plastic. "Window envelopes" used	l to hold the pa	icking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in t devices in their original packing materials is true and correct to t guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals, a	his form concerni the best of its kno cause it has been disclosure as trad s of the average w and non-metal ma	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ety Data Sheets vided by subco ed significant to e finished parts	ted's semicor ogy Incorpor s provided by ontract assem oxic metals co 3.	nductor ated cannot raw blers and omponents.			Total	100.00	-
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and inv	ity, express or im ted and its subsic voices.	blied, with respect to the information provided in this de liaries are contained in Microchip's standard terms and o	claration. The conditions of s	exclusive, lin ale. These ar	nited e provided	0.30	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	2.02
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor pro-	les to Material Col ers' reliance on th ducts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or in independent t	direct, consec hird party tes	quential or t reports		Tin	7440-31-5	100.00	
						l		Total	100.00	
						14 900				100.000

	Semiconductor Device Type: CT and OT 05 (Lead) SOT-23 (C7)				Alloy: :u)		Package Homos 8.1 Electronics (e.g	geneous Materials: J. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"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	SG-8300GM	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	100.00	
lron	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	CDA194+Ag	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 12561.09.5	Die Attach	0.563	0.090	5,625		Zinc	7440-66-6	0.13	
Diskuiskulathar of hisphanal E	F4208-62-8	Die Attach	0.105	0.017	1,030		Filospilolous	1123-14-0 T-4-1	0.00	
Diglycidylether of bisphenol-F Medified Amipo	54208-63-8 927 42 0	Die Attach	0.056	0.009	263	0.40		I otal	100.00	0.75
	827-43-0	Die Attach	0.026	0.004	203	0.12	(mg) I otal	Die Attach	% of I otal Weight	0.75
Silicon	7440-21-3	Unip (Die)	7.500	1.200	75,000	8390A	Silver (Ag)	7440-22-4	75	
Delladium	7440-50-6	Wire Bond palladium coated copper (CuPd)	0.197	0.031	1,905		Modified Epoxy Resin	13561-08-5	14	
Tip	7440-05-3	Whe Bond panadium coated copper (CuPd)	1.250	0.001	35	U	Modified Aming	927 42.0	8	
	7440-31-3	Plating on external leads (pins) - Matternin/ annealed at 150°C for Thour	100 000	16,000	1 000 000		Woullied Amine	027-43-0 Total	4	
		T / IN	100.000	10.000	1,000,000			TOTAL	100.00	
	0.0160	g Total Mass				1.20	Total (mg)	Chip (Die)	% of Total Weight	7.5
This semiconductor device and its homogenous materials co Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU ((RoHS Recast	Directive) and	d with EU		Doped Silicon	7440-21-3	100	
Compliance with the above EU Directives has been verified vi	a internal design con	trols, supplier declarations, and /or analytical test data.						Total	100.00	
If a chemical substance is absent from the list above, the che Technology Incorporated's knowledge and belief as of the da chemical substance, if any, is not below the threshold of regu	nical substance is No e of this document, t latory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide.	and, to the be e impurity con	est of Microch acentration of	nip the	0.03	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2
Molding compounds used by Microchip meet the UL94 V0 flat http://ul.com/global/eng/pages/offerings/industries/chemicals	nmability standard fo /plastics/	r plastics. You can access the UL iQTM family of databas	ses to obtain a	i test report a	t		Copper	7440-50-8	98	
The protective "tubes" in which the specific product is shippe box and certain "reels" may be made from PVC plastic.	ed are made from pol	vvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Palladium	7440-05-3	2	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this form material suppliers. Supplier information is often protected fro raw material suppliers. Information is provided only as estim These estimates do not include trace levels of dopants, metal	in this form concerni to the best of its know because it has been m disclosure as tradu ates of the average we s, and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipatec terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technolo ty Data Sheets ided by subco I significant to finished parts	ed's semicon ogy Incorpora provided by ntract assem oxic metals co	ductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any wan product warranties provided by Microchip Technology Incorp in Microchip's quotations, sales order acknowledgement, and	ranty, express or imp orated and its subsid invoices.	blied, with respect to the information provided in this dec iaries are contained in Microchip's standard terms and c	claration. The onditions of s	exclusive, lim ale. These are	lited e provided	0.20	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or ch otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	anges to Material Cor users' reliance on the products.	ttent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	s, direct or inc ndependent th	direct, consec hird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	
						16.00	0			100.000

			Termi Co	nation Base A pper Alloy (C	Alloy: 'u)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	: OT 05 (Lead) SOT-23 (P6)								e3
	-	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	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	EME-G600	Silica, vitreous	60676-86-0	85.00	1
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.025	0.514	30,245	1	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	194+AG	Copper	7440-50-8	95.54	1
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 -	Die Attach	0.012	0.002	116			Total	100.00	<u> 신</u>
Silicon	7440-21-3	Chip (Die)	4 380	0.745	43 800	0.05	(mg) Total	Die Attach	% of Total Weight	0.21
Gold	7440-57-5	Wire Bond	0.430	0.073	4 300	0.05	Aluminum oxido	1244-29-1	24	0.51
Tin	7440-31-5	Plating on external leads (nins) - Matte Tin / annealed at 150°C for 1 hour	2 670	0.073	26 700	0000143	Enoxy resin	Trade Secret	62	
101	7440 01 0	TOTALS:	100 000	17 000	1 000 000	۵m	pine (Trade Secret - 10039)	mine (Trade Secret - 1003	4	
	0.0470	Total Mass	100.000	11.000	1,000,000	741	inte (Trade deciet Todoo)	Total	100.00	1
	0.0170	g lotal mass						Total	100.00	
Directive 2002/53/EC (end-of-Life Vehicles (ELV) Directive).	biy with EO Directi		(KOHS Recasi	Directive) and		0.74	Total (mg)	Chip (Die)	% of Total Weight	4.38
Compliance with the above EU Directives has been verified via i	nternal design cor	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula	cal substance is N of this document, t tory concern for ar	OT an intentional ingredient in the semiconductor devic there is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the b le impurity coi	est of Microch ncentration of	nip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/p	nability standard fo lastics/	or plastics. You can access the UL iQTM family of databa	ises to obtain a	a test report a	t	0.07	(mg) Total	Wire Bond	% of Total Weight	0.43
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from po	yvinyl chloride (PVC) plastic. "Window envelopes" used	l to hold the pa	icking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concerni the best of its kno ecause it has beer disclosure as trad es of the average w and non-metal ma	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ety Data Sheets vided by subco ed significant to e finished parts	ted's semicon ogy Incorpora s provided by ontract assem oxic metals co s.	ductor ated cannot raw blers and omponents.			Total	100.00	-
Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpor in Microchip's quotations, sales order acknowledgement, and ir	nty, express or im ated and its subsic voices.	plied, with respect to the information provided in this de liaries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These are	iited e provided	0.45	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.67
Microchip disclaims any duty to notify users of updates or chan otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pr	ges to Material Co ers' reliance on th oducts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or in independent t	direct, consec hird party test	uential or reports		Tin	7440-31-5	100.00	
						1		Total	100.00	1
						17 000				100.000

MICROCHIP Semiconductor Device Type:	Semiconductor Device Type: CH and OT 06 (Lead) SOT-23 (C8 / CZ)						Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Paolo Sukatanaa		"Contained In" Sub-Component	% Total Woight	malaart		13.57	(mg) Total	Mold Compound	% ot Total Weight	79.8
	CAS Nulliber	Maid Compound	67.920	11 521	670.000		Cilico vitroouo	60676.96.0	9E 00	1
Silica, vitieous	00070-00-0	Mold Compound	67.630	0.021	40.070	ENIE-G600	Enony Posin	Trado Socrat	6.12	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878		Epuxy Resili Dhonalia Boain	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878		Enouge Crossel Neurolog	11ade Secret	0.13	
Carbon Black	29090-02-2	Mold Compound	1.900	0.332	19,551		Corbon Plook	29090-02-2	2.43	
Calboli Black	7440 50 9	Mold Compound	10.0239	1.705	2,394		Calboli Diack	1333-00-4 T-4-1	0.30	<u>1</u>
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314			lotal	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	194+AG	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	I rade Secret	Die Attach	0.338	0.057	3,375		Phosphorous	7723-14-0	0.08	J
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	84-3J	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 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 If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulator	ternal design cor al substance is N this document, ry concern for a	ve 2002/95/EC (RORS Directive), ED Directive 2017/65/EU ntrols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic there is no credible reason to believe that the unavoidab ny regulatory scheme world-wide.	e and, to the b e impurity cor	est of Microch	ip the	1.28	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	7.5
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard fo stics/	or plastics. You can access the UL iQTM family of databa	ses to obtain a	a test report a	t	0.03	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	re made from po	lyvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in the devices in their original packing materials is true and correct to t guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from or raw material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metals, a	his form concern he best of its kno cause it has beer lisclosure as trac of the average w nd non-metal ma	ing substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe le secrets and some information may not have been prov reight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ety Data Sheets vided by subco d significant to finished parts	ed's semicon ogy Incorpora s provided by ntract assem oxic metals co s.	ductor ated cannot raw blers and omponents.			Total	100.00	2
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorporat in Microchip's quotations, sales order acknowledgement, and inv	ty, express or im ed and its subsid oices.	plied, with respect to the information provided in this de diaries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These are	iited e provided	0.21	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor pro-	es to Material Co rs' reliance on th ducts.	ntent Declarations and shall not be liable for any damage the information in Material Content Declarations (MCD) or	es, direct or in independent tl	direct, consec hird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	
						17.000				100.000

	Termi Co	nation Base A pper Alloy (C	Alloy: Su)		Package Hom 8.1 Electronics (e	ogeneous Materials: e.g. pc boards, displa	iys)	JEDEC 97 Product Marking and/or Pkg. Labeling		
Semiconductor Device	Type: OT 06 (Lead) SOT	23 (6A)								e4
Paeio Substanca	CAS Number	"Contained In" Sub-Component	% Total Weight	malpart	nnm	7.94	(mg) Total	Mold Compound	% ot Total Weight	48.26
Silica vitroous (or fused)		Mold Compound	41.021	6 749	410.210	G770HCD	Silica vitroous (or fused)	60676-86-0	85.00	
Enoxy Resin	Trade Secret	Mold Compound	41.021	0.748	41 986	Grineb	Enoxy Resin	Trade Secret	8 70	
Phenolic Resin	Trade Secret	Mold Compound	2 896	0.476	28,956	-	Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.145	0.024	1,448		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	48.319	7,949	483,192			Total	100.00	
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	C194+AG	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 - 1	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	8006NS	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	Am	ine (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	
		T	OTALS: 100.000	16.450	1,000,000	0.18	Total (mg)	Chip (Die)	% of Total Weight	1.09
	0.0165 a To	tal Mass					Doped Silicon	7440-21-3	100	
Compliance with the above EU Directives has been verified	via internal design controls, su	pplier declarations, and /or analytical tes	t data.			0.02	(mg) Total	Wire Bond	% of Total Weight	0.12
If a chemical substance is absent from the list above, the cr Incorporated's knowledge and belief as of the date of this d any, is not below the threshold of regulatory concern for an	emical substance is NOT an in ocument, there is no credible re y regulatory scheme world-wid	tentional ingredient in the semiconducto eason to believe that the unavoidable imp e.	r device and, to the bes purity concentration of t	t of Microchip he chemical s	Technology substance, if		Doped Gold	7440-57-5	100	
Molding compounds used by Microchip meet the UL94 V0 fl http://ul.com/global/eng/pages/offerings/industries/chemica	ammability standard for plastic als/plastics/	s. You can access the UL iQTM family of	databases to obtain a t	est report at			<u> </u>	Total	100.00	
The protective "tubes" in which the specific product is ship and certain "reels" may be made from PVC plastic.	ped are made from polyvinyl c	nloride (PVC) plastic. "Window envelopes	" used to hold the pack	king slip on the	e outer box	0.07	(mg) Total	Plating on external leads (pins)	% of Total Weight	0.45
Microchip Technology Incorporated believes the informatio in their original packing materials is true and correct to the the completeness and accuracy of data in this form becaus Supplier information is often protected from disclosure as I Information is provided only as estimates of the average we include trace levels of dopants, metals, and non-metal mate	n in this form concerning subs best of its knowledge and belie a it has been compiled based o rade secrets and some informa light of these parts and the ave rials contained within silicon d	ances restricted by RoHS in Microchip T f, as of the date listed in this form. Micro n the ranges provided in Material Safety D tion may not have been provided by sub age weight of anticipated significant toxi evices (silicon IC) in the finished parts.	echnology Incorporated chip Technology Incorp Data Sheets provided by contract assemblers an c metals components.	d's semicondu porated cannot r raw material d raw material These estimate	ictor devices t guarantee suppliers. I suppliers. es do not		Nickel	7440-02-0	95.73	
Mineral in Tradinations Incompared data and an old second	arranty, express or implied, wi	h respect to the information provided in	this declaration. The ex	clusive, limite	ed product in		Palladium	7440-05-03	3.23	
wicrochip Technology incorporated does not provide any w warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, and	and its subsidiaries are contai invoices.	ned in Microchip's standard terms and co	inditions of sale. These	are provided i						
Microchip lechnology incorporated does not provide any w warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, and Microchip disclaims any duty to notify users of updates or o otherwise, suffered by users or third parties as a result of th or of this Certificate of Compliance for semiconductor prod	and its subsidiaries are contai invoices. :hanges to Material Content De- ie users' reliance on the inform ucts.	ed in Microchip's standard terms and co larations and shall not be liable for any o ation in Material Content Declarations (M	damages, direct or india CD) or independent thir	rect, conseque d party test re	ential or eports (SGS)		(Gold)	7440-57-5	1.04	
Microchip fechnology incorporated does not provide any w warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, and Microchip disclaims any duty to notify users of updates or o otherwise, suffered by users or third parties as a result of th or of this Certificate of Compliance for semiconductor prod	and its subsidiaries are contai invoices. :hanges to Material Content De- te users' reliance on the inform ucts.	eed in Microchip's standard terms and co clarations and shall not be liable for any c ation in Material Content Declarations (M	damages, direct or indi CD) or independent thir	rect, conseque d party test re	ential or eports (SGS)		(Gold)	7440-57-5 Total	1.04	

Bits Subatance CAS Number Cost of Contained in ** Total Number of Cost of Contained in ** Number of Cost o			06 # . 1 SOT 23 . m	Termiı Co	nation Base A pper Alloy (C	Alloy: :u)		Package Homo 8.1 Electronics (e.s	geneous Materials: J. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Bubance Bisic Bubance (1907) 400 (2007)Constraint (1907) 400 (2007)Weight (1907) 400 (2007)Part (1907) 400 (2007)Part 	Semiconductor Device Type:		Uo (Lead) SUI-23 (C8)	0/ Tatal	T	1					
abs 	Desite Orthoformer		Contained In"	% lotal			13.57	(mg) Total	Mold Compound	% ot Total Weight	79.8
$\frac{1}{10000} \frac{1}{10000} \frac{1}$	Basic Substance	CAS Number	Sub-component	weight	mg/part	ppm	00.000000	Cilian vitra sua		-	7
Install Install <t< td=""><td>Silica, vitreous</td><td>60676-86-0</td><td>Mold Compound</td><td>69.354</td><td>11.790</td><td>693,542</td><td>5G-8300GIVI</td><td>Silica, vitreous</td><td>50575-80-0</td><td>86.91</td><td></td></t<>	Silica, vitreous	60676-86-0	Mold Compound	69.354	11.790	693,542	5G-8300GIVI	Silica, vitreous	50575-80-0	86.91	
$\frac{1}{100} \frac{1}{100} \frac{1}$	Epoxy Resin (No bromine, No diantimony thoude)	Trade Secret	Mold Compound	0.121	1.041	61,207		Epoxy Resili	Trade Secret	7.07	
Outcompart Total	Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	1222 96 4	Mold Compound	4.078	0.693	40,778	-	Corbon Block	1000 0000	0.01	
Union 128/28/26 Last Frame 0.267 10/26 179 cmg1 tool text Frame Note 200 200 124/26 137 cmg1 tool 100		7440 50 0	Mold Compound	0.247	0.042	2,474		Calboll Black	1333-66-4	0.31	<u>1</u>
Str. 1240221 Loss France 0.020 0.024 2000 10.12 10.13 10.14	Copper	7440-50-8	Lead Frame	10.031	1.705	100,314	1 70	() = ()	Iotai	100.00	10.5
Definition Description Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>	Iron	7439-89-6	Lead Frame	0.247	0.042	2,468	1.79	(mg) Total	Lead Frame	% of Total Weight	10.5
Approx 7/21/56/3 Logg Frame 01/05	Silver	7440-22-4	Lead Frame	0.200	0.034	2,000	194 + Ag	Copper	7440-50-8	95.54	
Photophoton (7/20 44) (1/20 44)	Zinc	7440-66-6	Lead Frame	0.013	0.002	131		Iron	7439-89-6	2.35	
Light resc. Light resc. Did Attain Did Attain Did Struct Did Struct Did Attain Did Struct Did S	Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87		Silver	7440-22-4	1.91	
Sile Production Production <td>Epoxy resin</td> <td>Trade Secret</td> <td>Die Attach</td> <td>0.563</td> <td>0.096</td> <td>5,625</td> <td></td> <td>Zinc</td> <td>7440-66-6</td> <td>0.13</td> <td></td>	Epoxy resin	Trade Secret	Die Attach	0.563	0.096	5,625		Zinc	7440-66-6	0.13	
Curing / Hardner Ope Attach Ope Attach Ope (19) Ope (19)<	Silicon dioxide	Trade Secret	Die Attach	0.169	0.029	1,688		Phosphorous	7723-14-0	0.08	<u>j</u>
Other 7440-21-3 Chip (De) 7.000 1.27 75.000 9.13 mag Total Dia Attach % of Teat Weight 0.75 Peladum 7440-25-8 Wite Bond paladum coated copper (CuPd) 0.001 0.053 1.985 9900K Equival Total 20 <	Curing / Hardener	Agent	Die Attach	0.019	0.003	188			Total	100.00	
Organ 7440263 Wire Bond paladum coated copper (QuPd) 0.197 0.033 1.086 Besone C Exclusion That	Silicon	7440-21-3	Chin (Die)	7 500	1 275	75.000	0.12	(mg) Total	Die Attach	% of Total Woight	0.75
Painting 7440-05-3 Write Bond pulsitum coated copyer (CuPd) 0.004 0.031 0.03 0.031 0.03 0.031 0.031 0.031 0.031 0.031 0.031 0.031 0.031 0.031 0.031 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.000 0.0170 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100 0.0100	Copper	7440-50-8	Wire Bond ralladium coated copper (CuPd)	0.107	0.033	1 965	8000NC	Epoxy rosin	Trada Socrat	75	0.75
Image: Note of the series of the se	Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.000	35	0300110	Silicon dioxide	Trade Secret	22	
Interview	Tin	7440-03-5	Plating on external loads (pins) Matter Tip (appealed at 150°C for 1 hour	1 250	0.001	12 500		Curing / Hardonor	Trade Secret	23	
Outpoint Durate Trade Trade <thtrade< th="" thrade<=""> Trade <thtrad< td=""><td></td><td>7440-31-3</td><td>Flating of external leads (pins) - Matternin/ annealed at 150 C for Thour</td><td>100.000</td><td>17.000</td><td>1 000 000</td><td></td><td>Culling / Haldellei</td><td>Trade Secret</td><td>J 400.00</td><td><u> 1</u></td></thtrad<></thtrade<>		7440-31-3	Flating of external leads (pins) - Matternin/ annealed at 150 C for Thour	100.000	17.000	1 000 000		Culling / Haldellei	Trade Secret	J 400.00	<u> 1</u>
Unit V g Total Mass 1.28 Total (mg) Chip (be) % of Total Weight 7.5 This semiconductor device and its homogenous materials comploy with EU Directive 2021/SEC (End-Life Vehicles (EU) Directive). Directive 2021/SEC (End-Life Vehicles (EU) Directive). Directive 2021/SEC (End-Life Vehicles (EU) Directive). Total (mg) Chip (be) % of Total Weight 7.5 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. Total integral Total (mg) Chip (be) % of Total Weight 0.0 If a chemical substance is hosen from the list above, the chemical substance is NOT an internional ingredient in the semiconductor device and, to the best of Microchip Technology incorporated is now concern for any regulatory scheme world-wide. Total Total (mg) Chip (be) % of Total Weight 0.2 Modified compounds used by Microchip met the ULS4 V0 Itammability standard for plastics. You can access the UL 1QTM family of databases to obtain a test report at thrp://ul.com/globalerg/ngs/ges/offering/al/ackim metrials strights are ordered to the sof of is knowledge and belier as of the data list form. Microchip Technology Incorporated's semiconductor device and the soft is form/decedge and belier as of the data list of mis form. Microchip Technology Incorporated's semiconductor device in this form because it has been complete hossed on the ranges provided in Material Stery Data Sheen provided by subcontrate assemblers and components. Total Dida (mg) Palladum 7440-26-3 2 2 Witcrochip Te			TUTALS:	100.000	17.000	1,000,000			i otai	100.00	_
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.		0.0170	g Total Mass				1.28	Total (mg)	Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. If 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 0.03 (mg) Total Wire Bond palladium 0.2 If a chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. 0.03 (mg) Total Wire Bond palladium coded % of Total Weight 0.2 Molding compounds used by Microchip meet the ULS4 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at 0.03 (mg) Total Palladium 7440-05-3 2 Wicrochip Technology incorporated knowledge and belief, as of the date listed in this form. Microchip Technology incorporated is amend from PVC plastic. Total 100.00 Total 0.2 Wicrochip Technology incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology incorporated is amonoreation a metrial suppliers. Information is provided on an atterial strue and correct to the best of its subsidiaries are contained within silicon devices (silicon Cl) in the finished parts. Total 100.00 Wicrochip Technology incorporated knowledge and belief, as of the date listed in this form. Microchip Technology incorporated is another and partial suppliers. Information is provided on anaterials contham materials conthametrial suppliers. </td <td>This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</td> <td>with EU Directi</td> <td>ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU</td> <td>(RoHS Recast</td> <td>Directive) and</td> <td>d with EU</td> <td></td> <td>Doped Silicon</td> <td>7440-21-3</td> <td>100</td> <td></td>	This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directi	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU		Doped Silicon	7440-21-3	100	
If 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 0.03 (mg) Total Wire Bond 0.2 Technology 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, if any, is not below the threshold of regulatory concent for any regulatory cheme world-wide. 0.03 (mg) Total Wire Bond paleofic product is shipped at made from POV plastic. 0.2 Wire bond for gulatory concent for any regulatory concent for bolicy the threshold of regulatory concent for bolicy the reshold of regulatory concent for bolicy the reshold of regulatory concent for bolicy the reshold of regulatory concent for bolicy the date listed in this form concerning substances restricted by ROHS in Microchip Technology Incorporated semiconductor free is any bear and concerve of and an its form because it has been compiled based on the ranges provided by raw material suppliers. Microchip Technology Incorporated anot is often protected from disclosure as trade secrets and some information may not have been provided by raw material suppliers. Microchip Technology Incorporated dony as estimates of the average weight of these parts and the average weight of these parts and the average weight of the	Compliance with the above EU Directives has been verified via inte	ernal design cor	trols, supplier declarations, and /or analytical test data.						Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flam mability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ Copper 7440-50-8 98 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. Note: Total Palladum 7440-50-8 98 Wicrochip 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 canota durate at 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 canota durate material softey bate Sheets provided by yars material suppliers. Supplier Suppliers. Supplier Suppliers is often protected from disclosmeres at the average weight of these parts and the average weight of these parts. Note: Total Note: Total<	If a chemical substance is absent from the list above, the chemica Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulator	l substance is N this document, y concern for ar	OT an intentional ingredient in the semiconductor device there is no credible reason to believe that the unavoidabl y regulatory scheme world-wide.	and, to the b e impurity cor	est of Microch acentration of	nip the	0.03	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2
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 "redis" may be made from PVC plastic. 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 by praw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and accuract assemblers and raverage weight of these parts and the average weight of anticipated significant toxic metals completeness on 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 and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided by Microchip Technology Incorporated and invoices. Microchip disclasm sang 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 the users' reliance on the information in Material Scontene Declarations (MCD) or independent third party test reports or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or the parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports or third parties as a result of th	Molding compounds used by Microchip meet the UL94 V0 flammal http://ul.com/global/eng/pages/offerings/industries/chemicals/plas	bility standard fo tics/	or plastics. You can access the UL iQTM family of databas	ses to obtain a	i test report a	t		Copper	7440-50-8	98	
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 guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by taw been provided by subcontract assemblers and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. Suppliers. Suppliers. Suppliers. 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 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 users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.	The protective "tubes" in which the specific product is shipped are box and certain "reels" may be made from PVC plastic.	e made from po	lyvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Palladium	7440-05-3	2	
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 this declaration 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 (SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated believes the information in thi devices in their original packing materials is true and correct to th guarantee the completeness and accuracy of data in this form bec material suppliers. Supplier information is often protected from di raw material suppliers. Information is provided only as estimates of These estimates do not include trace levels of dopants, metals, an	s form concerni e best of its kno ause it has beer sclosure as trad of the average w d non-metal ma	ing substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe le secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ty Data Sheets ided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by intract assem oxic metals co	nductor ated cannot raw blers and omponents.			Total	100.00	-
Microcolip 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 (SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated does not provide any warranty product warranties provided by Microchip Technology Incorporate in Microchip's quotations, sales order acknowledgement, and invo	, express or im d and its subsid ices.	plied, with respect to the information provided in this dec diaries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These ar	nited e provided	0.21	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
<u> </u>	Microchip disclaims any duty to notify users of updates or change otherwise, suffered by users or third parties as a result of the user (SGS) or of this Certificate of Compliance for semiconductor produ-	s to Material Co s' reliance on th ucts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	s, direct or in ndependent ti	direct, consect nird party test	quential or t reports		Tin	7440-31-5	100.00	
									Total	100.00	

MICROCHIP Semiconductor Device Type: MB 03 (Lead) SOT-89 (A5 / AT)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Desis Sukstanos		"Contained In"	% Total Weight	m a la cat		28.26	(mg) Total	Mold Compound	% ot Total Weight	54.56
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm	ENE OCO	011		05.00	
Silica, vitreous	50676-86-0	Mold Compound	46.376	24.023	463,760	EME-G600	Silica, vitreous	00070-80-0	85.00	
Phenolic Resin (No Br / CL ShO3, No diantimony trioxide)	Trade Secret	Mold Compound	3 3/2	1.731	33,418	-	Phenolic Resin	Trade Secret	6.13	
Enory Cresol Novolac	29690-82-2	Mold Compound	1 337	0.692	13 367	1	Enoxy Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.164	0.085	1.637	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Erame	42 275	21 899	422 753	1	ourboin black	Total	100.00	
Irop	7439-89-6	Lead Frame	1 040	0.539	10 399	22.02	(ma) Total	Load Eramo	% of Total Weight	44.25
Silver	740-22-4	Lead Frame	0.843	0.000	8 430	104+46	Coppor	7440.50.9	05.54	44.23
Zinc	7440-22-4	Lead Frame	0.045	0.437	553	1347AG	lron	7440-30-6	2.25	
Phosphorous	7723-14-0	Lead Frame	0.037	0.029	365	1	Silver	7435-85-0	1.91	
Metal oxide	Trade Secret	Die Attach	0.102	0.013	1.023	1	Zinc	7440-66-6	0.13	
Epoxy resins	Trade Secret	Die Attach	0.102	0.053	1,023	1	Phosphorous	7723-14-0	0.08	
Glycol ethers	Trade Secret	Die Attach	0.078	0.000	775	1	Thosphorous	Total	100.00	
Curing / Hardener	Trade Secret	Die Attach	0.070	0.040	270	0.16	(mg) Total	Die Attech	% of Total Weight	0.24
Silicon	7440-21-3	Chip (Die)	0.020	0.014	4 100	0.10 9006NS	(iiig) rotai Motol oxido	Trado Socrat	22	0.31
Gold	7440-21-5	Wire Bond	0.410	0.212	2,500	0000143	Enovy resins	Trade Secret	33	
Tin	7440-57-5	Wile Bolid	0.330	0.161	3,300	-	Clucol othors	Trade Secret	33	
1III	7440-31-5	Plating on external leads (pins) - Matternin/ annealed at 150°C for 1 hour	100 000	51 800	1 000 000	-	Curing / Hardonor	Trade Secret	25	
		TOTALS:	100.000	51.000	1,000,000		Culling / Hardeller	Trade Secret	9	
	0.0518	g Total Mass						Totai	100.00	
This semiconductor device and its homogenous materials com Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Direction	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast	Directive) and	d with EU	0.21	Total (mg)	Chip (Die)	% of Total Weight	0.41
Compliance 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	
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regular Molding compounds used by Microchip meet the UL94 V0 flamm	cal substance is No of this document, t cory concern for an nability standard fo	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databas	and, to the be impurity cor ses to obtain a	est of Microch ncentration of a test report a	nip i the t	0.18	(mg) Total	Total Wire Bond	100.00 % of Total Weight	0.35
nttp://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/							Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concerni the best of its kno ecause it has been disclosure as trad is of the average w and non-metal ma	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safet e secrets and some information may not have been provi eight of these parts and the average weight of anticipated terials contained within silicon devices (silicon IC) in the	gy Incorporate the prechange ty Data Sheets ided by subco I significant to finished parts	ed's semicon ogy Incorpora provided by ontract assem oxic metals co s.	nductor ated cannot raw blers and omponents.			Total	100.00	
Vicrochip 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.						0.06	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.12
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 (SGS) or of this Certificate of Compliance for semiconductor products.							Tin	7440-31-5	100.00	
						1		Total	100.00	
						E1 000				
MICROCHIP Semiconductor Device Type	: RC 04 (Lead) SOT-143 (F7 / AB)	Termir Co	nation Base A oper Alloy (C	Alloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: a.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
---	--	---	--	---	---	-----------------	-----------------------------------	--	------------------------------------	--
		"Contained In"	% Total	[5.00	()= ()			00.57
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	5.69	(mg) Total	Mold Compound	% of Total Weight	62.57
Silica, vitreous	60676-86-0	Mold Compound	53.185	4.840	531,845	EME-G600	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38,324		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38,324		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.533	0.139	15,330		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.188	0.017	1,877		Carbon Black	1333-86-4	0.30	
Iron	7439-89-6	Lead Frame	14.095	1.283	140,947			Total	100.00	
Nickel	7440-02-0	Lead Frame	11.071	1.007	110,712	2.40	(mg) Total	Lead Frame	% of Total Weight	26.36
Silver	7440-22-4	Lead Frame	0.502	0.046	5,022	A42+AG	Iron	7439-89-6	53.47	
Cobalt	7440-48-4	Lead Frame	0.264	0.024	2,636		Nickel	7440-02-0	42.00	
Manganese	7439-96-5	Lead Frame	0.211	0.019	2,109		Silver	7440-22-4	1.91	
Zinc (Metal)	7440-44-0	Lead Frame	0.132	0.012	1,318		Cobalt	7440-48-4	1.00	
Silicon	7440-21-3	Lead Frame	0.079	0.007	791		Manganese	7439-96-5	0.80	
Cityon (Ag)	7723-14-0	Leau Flame	0.007	0.001	00		Zinc (Metal)	7440-44-0	0.50	
Silver (Ag)	Trado Soorot	Die Attach	0.259	0.024	2,591		Silicon	7440-21-3	0.30	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.001	0.000	00		Filospiloious	7723-14-0 T-4-1	0.03	
Silicon	7440 21 2	Chip (Dio)	4 200	0.001	42,000	0.02		Dia Attack	100.00	0.00
Silicon	7440-21-3	Chip (Die)	4.290	0.390	42,900	0.03	(mg) i otai	Die Attach	% of Total weight	0.33
Gold	7440-57-5	Wire Bond	0 110	0.010	1 100	84- 11 MICD4	Silver (Ag)	7440-22-4	70	
Tin	7440-31-5	Plating on external leads (nins) - Matte Tin / annealed at 150°C for 1 hour	6 340	0.577	63 400	ILWIISK4	Proprietary Resin	Trade Secret	19	
	1440 01 0	TOTALS:	100,000	9,100	1.000.000	Proprietar	v Curing agent & Hardener	Trade Secret	3	
	0 0001	a Tetel Mass		01100	.,,	riopilotai	y outling agoint a mardonor	Total	100.00	J
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via in	ly with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	0.39	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	4.29
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date o chemical substance, if any, is not below the threshold of regulate Molding compounds used by Microchin meet the UI 94 V0 flamm	al substance is No f this document, t ory concern for an ability standard fo	DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. r plastics You can access the III iOTM family of databa	e and, to the be le impurity cor	est of Microch icentration of	the					
http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	istics/			rtest report a	L	0.01	(mg) Total	Wire Bond	% of Total Weight	0.11
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	re made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	l to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
								Total	100.00	-
Microchip Technology Incorporated believes the information in ti devices in their original packing materials is true and correct to t guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from o raw material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metals, a	his form concerni he best of its know cause it has been lisclosure as trad of the average wo nd non-metal mat	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been pro- eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ety Data Sheets vided by subco d significant to e finished parts	ed's semicon ogy Incorpora provided by ntract assem oxic metals co a	ductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and inv	ty, express or imp ted and its subsid roices.	blied, with respect to the information provided in this de laries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These are	iited e provided	0.58	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	6.34
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor pro-	es to Material Cor ers' reliance on the ducts.	ttent Declarations and shall not be liable for any damag e information in Material Content Declarations (MCD) or	es, direct or ind independent th	lirect, consec hird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	•
						0.100				100.000

			Termi Co	nation Base A pper Alloy (C	Alloy: 'u)		Package Hom 8.1 Electronics (e	ogeneous Materials: .g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: DB 03 (Lead)	SOT-223 (F6)								e3
Pagia Sukatanga	CAS Number	"Contained In"	% Total Weight	malaart		56.72	(mg) Total	Mold Compound	% ot Total Weight	49.02
		Mold Compound	41 667	19 200	416.670	EME C600	Silico vitroous	60676.96.0	95.00	
Enow Resin (No bromine, No diantimony triovide)	Trade Secret	Mold Compound	3 002	40.209	30.025	EWIE-GOOD	Enovy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL ShO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025	-	Phenolic Resin	Trade Secret	6.13	
Enory Cresol Novolac	29690-82-2	Mold Compound	1 201	1 390	12 010		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.147	0.170	1 471		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44 941	51 997	449 408	-	ourbon Biddit	Total	100.00	
Iron	7439-89-6	Lead Frame	1 105	1 279	11 054	E4 42	(mg) Total	Lood Frama	% of Total Weight	47.04
Silver	7400 00 0	Load Frame	0.906	1.273	9.061	34.43	(ilig) Total	2440 50 8	% OF E4	47.04
Zino	7440-22-4	Lead Frame	0.090	1.037	6,901	194+AG	Copper	7440-50-8	95.54	
ZIIIC	7440-00-0	Lead Frame	0.039	0.000	200		lion	7439-89-6	2.35	
Phospholous Silver (Ag)	7123-14-0	Dia Attach	0.039	0.045	500		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4 Trade Cooret	Die Attach	0.502	0.501	5,024	-	ZINC	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.110	0.137	1,104	4 1	Phosphorous	//23-14-0	0.08	J
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.019	0.022	192			Total	100.00	
Silicon	7440-21-3	Chip (Die)	1.580	1.828	15,800	0.74	(mg) Total	Die Attach	% of Total Weight	0.64
Gold	7440-57-5	Wire Bond	0.150	0.174	1,500	84-1LMISR4	Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.570	1.816	15,700		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	115.700	1,000,000	Proprietary	Curing agent & Hardener	Trade Secret	3	
	0.1157	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials com Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	1.83	Total (mg)	Chip (Die)	% of Total Weight	1.58
Compliance with the above EU Directives has been verified via i	nternal design con	trois, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula	cal substance is No of this document, t tory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide.	e and, to the b e impurity co	est of Microch acentration of	nip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamn http://ul.com/global/eng/pages/offerings/industries/chemicals/p	nability standard fo lastics/	or plastics. You can access the UL iQTM family of database	ses to obtain a	a test report a	t	0.17	(mg) Total	Wire Bond	% of Total Weight	0.15
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concerni the best of its kno ecause it has been disclosure as trad is of the average w and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipated terials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ty Data Sheets rided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by ontract assem oxic metals co a	ductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpor in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid voices.	plied, with respect to the information provided in this dec iaries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	1.82	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.57
Microchip disclaims any duty to notify users of updates or chan otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Cor sers' reliance on th oducts.	ttent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	es, direct or in independent t	direct, conseq nird party test	uential or reports		Tin	7440-31-5	100.00	
						1		Total	100.00	
						115 700				100.000

			Termir Co	ation Base A oper Alloy (C	lloy: u)		Package Hom 8.1 Electronics (6	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Semiconductor Device Type	e: DC 05 (Le	ad) SOT-223 (N7)								
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	8.71	(mg) Total	Mold Compound	% ot Total Weight	52.77
Silica, vitreous	60676-86-0	Mold Compound	44,855	7.401	448.545	EMEG-600	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	1	Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.293	0.213	12,929	1	Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.158	0.026	1,583	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	35.148	5.799	351,482	1		Total	100.00	
Iron	7439-89-6	Lead Frame	0.865	0.143	8,646	6.07	(mg) Total	Lead Frame	% of Total Weight	36.79
Silver	7440-22-4	Lead Frame	0.701	0.116	7.008	194+AG	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		Theopholodo	Total	100.00	
Silicon	7440-21-3	Chin (Die)	1.030	0.004	10 300	0.14	(mg) Total	Die Attech	% of Total Weight	0.95
Silicon	7440-21-3	Chip (Die)	1.030	0.170	10,500	0.14	(ing) iotai	Die Attach		0.85
Gold	7440-57-5	Wire Bond	0.550	0.001	5 500	84-	Silvor (Ag)	7440-22-4	70	
Tin	7440-31-5	Plating on external loads (pins) Matte Tin (appealed at 150°C for 1 hour	8 010	1 322	80,100	ILWIJK4	Proprietary Resin	Trada Socrat	19	
	7440-51-5	Flating of externarieads (pins) - Matternin/ annealed at 150 C for 1100	100 000	16 500	1 000 000	Proprietar	Curing agent & Hardener	Trade Secret	3	
	0.0405	Total Mass	100.000	10.500	1,000,000	Fiophetai	y curing agent & natuener	Tatel	100.00	
	0.0165	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials com Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Direction	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast	Directive) and	d with EU	0.17	Total (mg)	Chip (Die)	% of Total Weight	1.03
Compliance with the above EU Directives has been verified via i	nternal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula	cal substance is N of this document, t tory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide.	and, to the be impurity cor	est of Microch centration of	ip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamn http://ul.com/global/eng/pages/offerings/industries/chemicals/p	nability standard fo lastics/	or plastics. You can access the UL iQTM family of databas	ses to obtain a	test report a	t	0.09	(mg) Total	Wire Bond	% of Total Weight	0.55
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used t	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
								Total	100.00	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concerni the best of its kno ecause it has been disclosure as trad es of the average w and non-metal ma	ng substances restricted by ROHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safet e secrets and some information may not have been provi eight of these parts and the average weight of anticipated terials contained within silicon devices (silicon IC) in the	gy Incorporat chip Technol y Data Sheets ded by subco I significant to finished parts	ed's semicon ogy Incorpora provided by ntract assem xic metals co	ductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpor in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid voices.	olied, with respect to the information provided in this dec liaries are contained in Microchip's standard terms and co	laration. The onditions of s	exclusive, lim ale. These are	ited provided	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01
Microchip disclaims any duty to notify users of updates or chan otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Con sers' reliance on th oducts.	ntent Declarations and shall not be liable for any damages e information in Material Content Declarations (MCD) or in	s, direct or ind ndependent th	lirect, consec ird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	

MICROCHIP Semiconductor Device Type	: OS 05 (Lea	d) TSOT (L9)	Termir Coj	ation Base A oper Alloy (C	Alloy: a)		Package Hom 8.1 Electronics (e	ogeneous Materials: .g. pc boards, display	's)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basia Subatanaa		"Contained In"	% Total Weight	malaart		7.99	(mg) Total	Mold Compound	% ot Total Weight	62.42
Basic Substance	CAS Number	Sub-component	weight	ing/part	ppm		Silion vitrooup	60676.86.0	85.00	
Silica, vitreous	60676-86-0	Mold Compound	53.057	6.791	530,570	EME G-600	Silica, vitreous	00070-00-0	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	194+AG	Copper	7440-50-8	95.54	
ZINC	7440-66-6	Lead Frame	0.033	0.004	335		liron	7439-89-6	2.35	
Silver (Ag)	7123-14-0	Die Attech	1.621	0.003	15 209		Silver	7440-22-4	1.91	
Broprietan/ Resin	Trade Secret	Die Attach	0.361	0.190	3 608		ZIIIC	7440-00-0	0.13	
Proprietary Curing agent & Hardoner	Trade Secret	Die Attach	0.050	0.040	5,000		Filospiloious	7725-14-0 Total	0.00	
Silicon	7440-21-3	Chip (Die)	5 340	0.007	53 400	0.25	(mg) Total	Die Attech	100.00	1.05
	7440-21-5	Wire Bood	0.400	0.004	4.000	0.25 84-1LMISR4	(iiig) Totai	7440.00.4	% of Total Weight	1.95
Tin	7440-31-5	Wile Boliu Blating on external leads (sins) Matte Tin (appealed at 150% for 1 hour	3 110	0.001	31 100		Proprietary Resin	Trado Socrat	19	
100	7440-31-3	Flating of external leads (pins) = Matter 1117 annealed at 150 C for Thour TOTALS:	100.000	12,800	1.000.000	Proprietar	v Curing agent & Hardener	Trade Secret	3	
	0 0129	a Total Mass			1,000,000	i ropriota.	y curing agoin a maraonor	Total	100.00	
	0.0120	g rotarwass							100100	
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ly with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	0.68	Total (mg)	Chip (Die)	% of Total Weight	5.34
Compliance with the above EU Directives has been verified via in	ternal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date o chemical substance, if any, is not below the threshold of regulate	al substance is No f this document, t ory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidabl y regulatory scheme world-wide.	and, to the be e impurity con	est of Microch centration of	nip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamm. http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard fo astics/	or plastics. You can access the UL iQTM family of databa	ses to obtain a	test report a	t	0.05	(mg) Total	Wire Bond	% of Total Weight	0.4
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	re made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
								Total	100.00	•
Microchip Technology Incorporated believes the information in the devices in their original packing materials is true and correct to t guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metals, a	his form concerni he best of its know cause it has been disclosure as trade s of the average we nd non-metal mat	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technolo ty Data Sheets ided by subco I significant to finished parts	ed's semicon ogy Incorpora provided by ntract assem xic metals co	ductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and inv	ty, express or imp ted and its subsid roices.	plied, with respect to the information provided in this dec laries are contained in Microchip's standard terms and c	claration. The onditions of s	exclusive, lim ale. These are	iited e provided	0.40	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.11
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use	es to Material Cor ers' reliance on the	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	s, direct or inc ndependent th	lirect, consec	uential or		Tin	7440-31-5	100.00	
(SGS) or of this Certificate of Compliance for semiconductor pro-	ducts.		·						100.00	
(SGS) or of this Certificate of Compliance for semiconductor pro	ducts.			,,				Total	100.00	

MICROCHIP Semiconductor Device Type:	: LB 03 (Lead) SC-70 (в2 / в.)	Termir Co	ation Base / oper Alloy (C	Alloy: Su)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Pagia Substance		"Contained In" Sub-Component	% Total Weight	malaart		4.39	(mg) Total	Mold Compound	%ot Total Weight	37.38
Silion vitrooun		Mold Compound	67.920	111g/part	679 200	EME C600	Silion vitroouo	60676.96.0	95.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4 888	0.269	48 878	LINE-GOOD	Enoxy Resin	Trade Secret	613	
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	CDA 194	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	7440-43-9	Lead Frame	0.000	0.000	1		Chromium	7440-47-3	0.01	
Silver (Ag)	7440-22-4	Die Attach	0.589	0.032	5,888		Lead	7439-92-1	0.01	
Proprietary Resin	Trade Secret	Die Attach	0.139	0.008	1,388		Cadmium	7440-43-9	0.00	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.001	225			Total	100.00	
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	84- 1LMISR4	Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	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	
		TOTALS:	100.000	5.500	1,000,000	Proprietary	Curing agent & Hardener	Trade Secret	3	
	0.0058	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast I	Directive) and	with EU	0.41	Total (mg)	Chip (Die)	% of Total Weight	0.51
Compliance with the above EU Directives has been verified via inte	ernal design contr	ols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemical Technology Incorporated's knowledge and belief as of the date of substance, if any, is not below the threshold of regulatory concern	substance is NO this document, the for any regulator	T an intentional ingredient in the semiconductor device are is no credible reason to believe that the unavoidable y scheme world-wide.	and, to the be impurity cond	st of Microchi centration of t	p he chemical			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flammal http://ul.com/global/eng/pages/offerings/industries/chemicals/plas	bility standard for tics/	plastics. You can access the UL iQTM family of databas	es to obtain a	test report at		0.01	(mg) Total	Wire Bond	% of Total Weight	3
The protective "tubes" in which the specific product is shipped are and certain "reels" may be made from PVC plastic.	e made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used t	o hold the pac	king slip on t	he outer box		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in thi devices in their original packing materials is true and correct to th guarantee the completeness and accuracy of data in this form bec suppliers. Supplier information is often protected from disclosure suppliers. Information is provided only as estimates of the average	s form concerning e best of its knowl ause it has been c as trade secrets a e weight of these p metal materials co	g substances restricted by RoHS in Microchip Technolog edge and belief, as of the date listed in this form. Micro ompiled based on the ranges provided in Material Safet nd some information may not have been provided by arts and the average weight of anticipated significant to ntained within silicon devices (silicon IC) in the finisher	gy Incorporate chip Technolo y Data Sheets ubcontract ass oxic metals con d parts.	d's semicond gy Incorporat provided by r emblers and mponents. Th	luctor ted cannot aw material raw material tese			Total	100.00	
estimates do not include trace levels of dopants, metals, and non-								Plating on external		
Microchip Technology Incorporated does not provide any warranty warranties provided by Microchip Technology Incorporated and its Microchip's quotations, sales order acknowledgement, and invoice	v, express or impli s subsidiaries are es.	ed, with respect to the information provided in this dec contained in Microchip's standard terms and conditions	aration. The e of sale. These	xclusive, limi e are provideo	ted product d in	0.07	(mg) Total	leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	52.92
esumates to not include trace levels or dopants, metals, and non- Microchip Technology Incorporated does not provide any warranty warranties provided by Microchip Technology Incorporated and its Microchip's quotations, sales order acknowledgement, and invoice Microchip disclaims any duty to notify users of updates or change otherwise, suffered by users or third parties as a result of the user (SGS) or of this Certificate of Compliance for semiconductor produ	/, express or impli s subsidiaries are es. s to Material Conto s' reliance on the ucts.	ed, with respect to the information provided in this deci contained in Microchip's standard terms and conditions ent Declarations and shall not be liable for any damages information in Material Content Declarations (MCD) or ir	aration. The e of sale. These s, direct or indi adependent thi	xclusive, limi a are provideo rect, consequ rd party test i	ted product d in uential or reports	0.07	(mg) Total Tin	leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5	%of Total Weight	52.92
A summary of not include trace levels or dopants, metals, and non- Microchip Technology Incorporated does not provide any warrants warranties provided by Microchip Technology Incorporated and its Microchip's quotations, sales order acknowledgement, and invoice Microchip disclaims any duty to notify users of updates or change otherwise, suffered by users or third parties as a result of the user (SGS) or of this Certificate of Compliance for semiconductor produ	r, express or impli s subsidiaries are ss. s to Material Conte s' reliance on the ucts.	ed, with respect to the information provided in this decl contained in Microchip's standard terms and conditions ent Declarations and shall not be liable for any damages information in Material Content Declarations (MCD) or ir	aration. The e s of sale. These s, direct or indi adependent thi	xclusive, limi are provideo rect, consequ rd party test i	ted product d in uential or reports	0.07	(mg) Total Tin	leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5 Total	%of Total Weight 100.00 100.00	52.92

	e: LT 05 (Lead)	SC-70 (B4/B2)	Termir Co	ation Base A oper Alloy (C	Alloy: u)		Package Hom 8.1 Electronics (e	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			2 59	(mg) Total	Mold Compound	% of Total Weight	41 18
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	2.39	(ing) rotai	Mola compound	%ot rotal weight	41.10
Silica, vitreous	60676-86-0	Mold Compound	35.003	2.205	350,030	EME-G600	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)	1 rade Secret	Mold Compound	2.522	0.159	25,223	-	Enory Crosol Novolac	20600-92-2	0.13	
Carbon Black	1333-86-4	Mold Compound	0.124	0.004	1 2 3 5	-	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	6.630	0.000	66 303	-	Calbon black	Total	100.00	
Irop	7439-89-6	Lead Frame	0.000	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	194+AG	Copper	7440-50-8	95.54	0.34
Zinc	7440-66-6	Lead Frame	0.009	0.000	87	134140	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	1	Phosphorous	7723-14-0	0.08	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.030	0.002	303	1 '		Total	100.00	
Silicon	7440-21-3	Chip (Die)	1.410	0.089	14.100	0.06	(mg) Total	Die Attach	% of Total Weight	1.01
						84-			5	
Gold	7440-57-5	Wire Bond	0.930	0.059	9,300	1LMISR4	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	Proprietary	Curing agent & Hardener	Trade Secret	3	
	0.0063	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	bly with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	0.09	Total (mg)	Chip (Die)	% of Total Weight	1.41
Compliance with the above EU Directives has been verified via in	nternal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regulat	cal substance is No of this document, t ory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide.	e and, to the be e impurity cor	est of Microch centration of	nip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	ability standard fo astics/	r plastics. You can access the UL iQTM family of databas	ses to obtain a	test report a	t	0.06	(mg) Total	Wire Bond	% of Total Weight	0.93
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concerni the best of its know ecause it has been disclosure as trade s of the average we and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wiedge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ty Data Sheets ided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by ntract assem xic metals co	ductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid voices.	blied, with respect to the information provided in this dec iaries are contained in Microchip's standard terms and c	claration. The onditions of s	exclusive, lim ale. These are	iited e provided	3.06	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	48.53
Microchip disclaims any duty to notify users of updates or change otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Cor ers' reliance on the oducts.	ttent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	s, direct or ind ndependent th	lirect, consec ird party test	uential or reports		Tin	7440-31-5	100.00	
						l		Total	100.00	
						6 200				100.000

			Termir Co	nation Base A pper Alloy (C	Alloy: u)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	: LT 06 (Lead) SC-	70 (R5)								e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	2.79	(mg) Total	Mold Compound	% ot Total Weight	42.97
Silica, vitreous	60676-86-0	Mold Compound	36.525	2.374	365,245	EMEG-600	Silica, vitreous	60676-86-0	85.00	1
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.632	0.171	26,319		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.632	0.171	26,319		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.053	0.068	10,528		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.129	0.008	1,289		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	7.079	0.460	70,793			Total	100.00	
Iron	7439-89-6	Lead Frame	0.174	0.011	1,741	0.48	(mg) Total	Lead Frame	% of Total Weight	7.41
Silver	7440-22-4	Lead Frame	0.141	0.009	1,412	A194 + Ag	Copper	7440-50-8	95.54	1
Zinc	7440-66-6	Lead Frame	0.009	0.001	93	_	Iron	7439-89-6	2.35	1
Phosphorous	7723-14-0	Lead Frame	0.006	0.000	61		Silver	7440-22-4	1.91	1
Aluminum oxide	1344-28-1	Die Attach	0.424	0.028	4,236		Zinc	7440-66-6	0.13	1
Epoxy resin	Trade Secret	Die Attach	0.770	0.050	7,702		Phosphorous	7723-14-0	0.08	1
Amine (Trade Secret - 10039)	(Trade Secret -	Die Attach	0.046	0.003	463			Total	100.00	
Silicon	7440-21-3	Chip (Die)	1.860	0.121	18.600	0.08	(mg) Total	Die Attach	% of Total Weight	1 24
Gold	7440-57-5	Wire Bond	0.210	0.014	2 100	8006NS	Aluminum oxide	1344-28-1	34	
Tin	7440-31-5 Plati	ng on external leads (nins) - Matte Tin / annealed at 150°C for 1 hour	46.310	3.010	463 100		Epoxy resin	Trade Secret	62	1
	140010 114	TOTAL S:	100 000	6 500	1 000 000		Amine	Trade Secret	4	1 1
	0.0065 - 7	atal Masa		0.000	.,,		7411110	Total	. 100.00	- -
This comises ductor device and its her even ous materials comm	U.UUUU g 1	Olai Mass								
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	by with EU Directive 20	02/95/EC (ROHS Directive), EU Directive 2011/65/EU	(ROHS Recast	Directive) and	a with EU	0.12	Total (mg)	Chip (Die)	% of Total Weight	1.86
Compliance with the above EU Directives has been verified via in	nternal design controls,	supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulat	al substance is NOT ar f this document, there ory concern for any reg	n intentional ingredient in the semiconductor devic is no credible reason to believe that the unavoidab ulatory scheme world-wide.	e and, to the b le impurity cor	est of Microch acentration of	iip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	ability standard for pla astics/	stics. You can access the UL iQTM family of databa	ases to obtain a	i test report a	t	0.01	(mg) Total	Wire Bond	% of Total Weight	0.21
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	are made from polyviny	I chloride (PVC) plastic. "Window envelopes" used	I to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
						1		Total	100.00	
Microchip Technology Incorporated believes the information in t devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals, a	his form concerning su the best of its knowledg ccause it has been com disclosure as trade sec s of the average weight and non-metal material:	Ibstances restricted by RoHS in Microchip Technol ge and belief, as of the date listed in this form. Micr piled based on the ranges provided in Material Saft rets and some information may not have been prov of these parts and the average weight of anticipate s contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol- ety Data Sheets vided by subco ed significant to e finished parts	ed's semicon ogy Incorpora provided by ntract assem oxic metals co	ductor ated cannot raw blers and mponents.					
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	nty, express or implied, ited and its subsidiaries voices.	with respect to the information provided in this de s are contained in Microchip's standard terms and o	eclaration. The conditions of s	exclusive, lim ale. These are	ited e provided	3.01	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	46.31
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Content ers' reliance on the info ducts.	Declarations and shall not be liable for any damag rmation in Material Content Declarations (MCD) or	es, direct or ind independent th	lirect, conseq hird party test	uential or reports		Tin	7440-31-5	100.00	
						l		Total	100.00	
						6.500				100.000

	•• SS 20 (lead)	SSOP 200" (03 / 05)	Termi Co	nation Base opper Alloy (0	Alloy: Cu)		Package Homo 8.1 Electronics (e.	ogeneous Materials: g. pc boards, display:	5)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
	. 00 20 (Lead)	"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	malport	nnm	131.03	(mg) Total	Mold Compound	% ot Total Weight	79.8
	CAS Number	Mold Compound	60.254	112 000	602 542	SC-9200GM	Silica vitroous	60676-96-0	96.01	7
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6 121	10.050	61 207	00-000001	Enoxy 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	4
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	CDA194+AG	Copper	7440-50-8	05 54	10.0
Zinc	7440-66-6	Lead Frame	0.013	0.020	131	ODATSHIAO	Irop	7439-89-6	2 35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.022	87		Silver	7440-22-4	1 91	
Silver (Ag)	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	
Dialycidylether 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	83904	Silver (Ag)	7440-22-4	75.00	0.10
Doped Gold	7440-57-5	Wire Bond	0.200	0.328	2,000	00007	Modified Epoxy Resin	13561-08-5	14.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	2.053	12,500	Die	lycidylether of bisphenol-F	54208-63-8	7.50	
		TOTALS:	100.000	164.200	1.000.000		Modified Amine	827-43-0	3.50	
	0 16/2	a Total Mass			.,,			Total	100.00	4
Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via in If a chemical substance is absent from the list above, the chemic: Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulato	ternal design contr al substance is NO f this document, th vry concern for any	rols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide.	e and, to the I e impurity co	pest of Microconcentration c	hip of the	Doped Silicon	Doped Silicon	7440-21-3 Total	100 100.00	
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard for stics/	plastics. You can access the UL iQTM family of databas	ses to obtain	a test report	at	0.33	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	re made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used	to hold the p	acking slip o	n the outer		Doped Gold	7440-57-5	100.00	
Microchip Technology Incorporated believes the information in the devices in their original packing materials is true and correct to the cannot guarantee the completeness and accuracy of data in this for raw material suppliers. Supplier information is often protected for and raw material suppliers. Information is provided only as estim components. These estimates do not include trace levels of dopa	his form concernin he best of its know orm because it has om disclosure as tt ates of the average ints, metals, and no	g substances restricted by RoHS in Microchip Technolo ledge and belief, as of the date listed in this form. Micro s been compiled based on the ranges provided in Mater rade secrets and some information may not have been p e weight of these parts and the average weight of anticip on-metal materials contained within silicon devices (sili	by Incorpora ochip Techno ial Safety Dat provided by s pated signific icon IC) in the	ated's semico logy Incorpor ta Sheets pro- subcontract a cant toxic met e finished par	nductor rated vided by ssemblers als ts.			Total	100.00	-
Microchip Technology Incorporated does not provide any warrant product warranties provided by Microchip Technology Incorporat in Microchip's quotations, sales order acknowledgement, and inv	ty, express or impl ed and its subsidia oices.	ied, with respect to the information provided in this dec aries are contained in Microchip's standard terms and c	claration. The onditions of	e exclusive, lii sale. These a	mited re provided	2.05	(mg) Total	leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor proc	es to Material Cont rs' reliance on the ducts.	ent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or i	s, direct or in ndependent	ndirect, conse third party tes	equential or st reports		Tin	7440-31-5	100.00	
								Total	100.00	

164.200

Semiconductor Device Type:	: SS 24 (Lead) SSOP .209" (J2 / JH)	Termir Co	nation Base A pper Alloy (C	Alloy: :u)		Package Homo 8.1 Electronics (e.	ogeneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	121.55	(mg) Total	Mold Compound	% ot Total Weight	65.17
011	00070 00 0		55.005	400.040	550.045		Silica, vitreous	60676-86-0	85.00	
Silica, vitreous	50575-85-0 Trada Saarat	Mold Compound	2002	7.445	20,017	EME-G600	Epoxy Posin	Trada Socrat	6.12	
Phonolic Resin (No Br / CL ShO2, No diantimony trioxide)	Trade Secret	Mold Compound	2.002	7.445	20.017	-	Phenolic Resin	Trade Secret	6.13	
Enory Cresol Novalac	20600-82-2	Mold Compound	1 507	2 078	15 967	-	Enory Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.196	0.365	1 955	-	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	28 222	52.636	282 218		Garbon Black	Total	100.00	
Irop	7439-89-6	Lead Frame	0.694	1 295	6 942	EE 10	(mg) Total	Lood Fromo	% of Total Weight	20 E4
Silver	7440-22-4	Lead Frame	0.563	1.250	5.627	194+AG	(ilig) Total	7440-50-9		29.34
Zinc	7440-22-4	Lead Frame	0.303	0.069	360	194+AG	lrop	7440-50-6	2 25	
Bhosphorous	7722 14 0	Lead Frame	0.037	0.009	244	-	Silver	7439-69-6	2.33	
Filospiloious	7//0-22-/	Die Attach	0.024	1 159	6 216	-	Zinc	7440-22-4	0.12	
Epoxy resin	Trade Secret	Die Attach	0.022	0.313	1,680	-	Phosphorous	7440-00-0	0.13	
Lpoxy resili	Trade Secret	Die Attach	0.100	0.017	1,000	-	Filospiloious	1123-14-0	0.00	<u> </u>
Initial Oxide	Trade Secret	Die Attach	0.025	0.047	252	4.57		i otal	100.00	
Ganina-butyrolactone	90-40-0	Die Allach	0.025	0.047	252	1.57	(mg) I otal	Die Attach	% of I otal Weight	0.84
Silicon	7440-21-3	Chip (Die)	2.490	4.644	24,900	8290	Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.250	0.466	2,500	-	Epoxy resin	Irade Secret	20	
Lin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.710	3.189	17,100	-	Metal oxide	Trade Secret	3	
		TOTALS:	100.000	186.510	1,000,000		Gamma-butyrolactone	96-48-0	3	
	0.1865	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials compl Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ly with EU Directiv	/e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	4.64	Total (mg)	Chip (Die)	% of Total Weight	2.49
Compliance with the above EU Directives has been verified via in	ternal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemic: Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulato	al substance is No f this document, t pry concern for an	OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the be le impurity cor	est of Microch acentration of	nip the		<u> </u>	Total	100.00	2
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard fo stics/	r plastics. You can access the UL iQTM family of databa	ses to obtain a	i test report a	t	0.47	(mg) Total	Wire Bond	% of Total Weight	0.25
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	re made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
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- material suppliers. Supplier information is often protected from of raw material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metals, a	his form concerni he best of its know cause it has been lisclosure as trad- of the average wo nd non-metal mat	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe secrets and some information may not have been pro- eight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ety Data Sheets vided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by intract assem oxic metals co	aductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorporat in Microchip's quotations, sales order acknowledgement, and inv	ty, express or imp ed and its subsid oices.	blied, with respect to the information provided in this de iaries are contained in Microchip's standard terms and o	claration. The conditions of s	exclusive, lim ale. These are	iited e provided	3.19	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.71
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor proc	es to Material Cor rs' reliance on the ducts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or ind independent th	direct, consec nird party test	uential or reports		Tin	7440-31-5	100.00	
						1		Total	100.00	
						186.510				100.000

	: SS and SI 2	3 (Lead) SSOP 209" (N2 / ND)	Termir Co	ation Base A oper Alloy (C	lloy: u)		Package Hom 8.1 Electronics (e	nogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	182.90	(mg) Total	Mold Compound	% ot Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	155.466	678,300	EME-G600	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	11.203	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	11.203	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	4.481	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.549	2,394		Carbon Black	1333-86-4	0.30	l
Copper	7440-50-8	Lead Frame	10.031	22.992	100,314			Total	100.00	
Iron	7439-89-6	Lead Frame	0.247	0.566	2,468	24.07	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.458	2,000	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.030	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.020	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	1.289	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.241	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.129	563			Total	100.00	
Modified Amine	827-43-0	Die Attach	0.026	0.060	263	1.72	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	17.190	75,000	8390A	Silver (Ag)	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.200	0.458	2,000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	2.865	12,500	Dig	lycidylether of bisphenol-F	54208-63-8	8	
		TOTALS:	100.000	229.200	1,000,000		Modified Amine	827-43-0	4	J
	0.2292	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ly with EU Directiv	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	17.19	Total (mg)	Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via in	nternal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulat	cal substance is No of this document, t ory concern for an	OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide.	e and, to the be le impurity con	est of Microch centration of	iip the			Total	100.00	<u>.</u>
Molding compounds used by Microchip meet the UL94 V0 flamm http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	ability standard fo astics/	r plastics. You can access the UL iQTM family of databa	ises to obtain a	test report at	t	0.46	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	are made from pol	vvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
								Total	100.00	4
Microchip Technology Incorporated believes the information in to devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals, a	his form concerning the best of its know acause it has been disclosure as trade s of the average we and non-metal mat	ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe s secrets and some information may not have been prov sight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technolo ety Data Sheets vided by subco d significant to e finished parts	ed's semicon ogy Incorpora provided by ntract assemi xic metals co	ductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ted and its subsid voices.	lied, with respect to the information provided in this de laries are contained in Microchip's standard terms and o	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	2.87	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Cor ers' reliance on the ducts.	tent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or ind independent th	lirect, conseq ird party test	uential or reports		Tin	7440-31-5	100.00	
							L.	Total	100 00	4
						220.200		10181	.00.00	400.000

Місвоснір			Termi	ination Base opper Alloy (Alloy: Cu)		Package Home 8.1 Electronics (e	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Ty	pe: WHE 32 T	SOP 8x14mm (W6)								es
		"Contained In"	% Total			199.26	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-component	weight	mg/part	ppm	ENE 0700			05.00	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	169.372	678,300	EME-G700	Silica, vitreous (or fused)	60676-86-0 Teads Cases	85.00	
Epoxy Resin	Trade Secret	Mold Compound	6.943	17.336	69,426		Epoxy Resin	Trade Secret	8.70	
Corbon Black	1222 96 4	Mold Compound	4.700	0.509	47,000		Carbon Blook	1222.06.4	0.00	
Carbon Black	7440 50 9	Lood Frame	10.000	24.071	2,394		Calboli black	1333-00-4 Total	0.30	4
Niekel	7440-50-8	Lead Frame	0.267	24.971	2 667	00.00	(mm) T=4=1	Total	100.00	40.5
Ciliaan	7440-02-0	Lead Frame	0.207	0.000	2,007	20.22	(mg) Total	Lead Frame	% of Total Weight	10.5
Magnesium	7440-21-3	Lead Frame	0.047	0.110	4/3	C/025 + Ag	Copper	7440-50-8	95.24	
Silver	7439-93-4	Lead Frame	0.011	0.020	1 752		Silicon	7440-02-0	2.34	
Silver	7440-22-4	Die Attach	0.600	1 498	6,000		Magnesium	7440-21-3	0.45	
Epoxy Resin	Trade Secret	Die Attach	0.128	0.318	1,275		Silver	7440-22-4	1.67	
Copper	7440-50-8	Die Attach	0.023	0.056	225			Total	100.00	4
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	8340	Silver	7440-22-4	80.00	0.10
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.121	12,500	0010	Epoxy Resin	Trade Secret	17.00	
		TOTALS:	100.000	249.700	1.000.000	1	Copper	7440-50-8	3.00	
	0 2/07	a Total Mass			.,,		* * P P *	Total	100.00	4
Compliance with the above EU Directives has been verified via If a chemical substance is absent from the list above, the chem Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of reguli Molding compounds used by Microchip meet the UL94 V0 flam http://ul.com/global/eng/pages/offerings/industries/chemicals/ The protective "tithes" in which the specific product is shipper	internal design contr ical substance is NO of this document, th atory concern for any mability standard for plastics/ are made from poly	ols, supplier declarations, and /or analytical test data. T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidabl regulatory scheme world-wide. plastics. You can access the UL iQTM family of databa: vinul chloride (PVC) plastic. "Window envelopes" used	e and, to the l e impurity co ses to obtain to hold the p	best of Microo ncentration o a test report acking slip o	chip of the at	Doped Silicor	Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.2
box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form material suppliers. Supplier information is often protected fron raw material suppliers. Information is provided only as estimat components. These estimates do not include trace levels of do	this form concernin the best of its know because it has been disclosure as trade es of the average wei pants, metals, and no	g substances restricted by RoHS in Microchip Technolo ledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe secrets and some information may not have been prov ght of these parts and the average weight of anticipatec on-metal materials contained within silicon devices (sili	ogy Incorpora ochip Techno ty Data Shee ided by subc d significant f icon IC) in the	ated's semico logy Incorpo ts provided b ontract asser toxic metals e finished pa	onductor orated cannot y raw mblers and rts.		Doped Gold	7440-57-5 Total	100.00	
Microchip Technology Incorporated does not provide any warr product warranties provided by Microchip Technology Incorpo in Microchip's quotations, sales order acknowledgement, and i	anty, express or impl rated and its subsidia nvoices.	ied, with respect to the information provided in this dec aries are contained in Microchip's standard terms and c	claration. The	exclusive, li sale. These a	mited are provided	3.12	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chan otherwise, suffered by users or third parties as a result of the u (SGS) or of this Certificate of Compliance for semiconductor p	nges to Material Cont sers' reliance on the roducts.	ent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or i	s, direct or in independent	idirect, conse third party te	equential or st reports		Tin	7440-31-5	100.00	
								i otai	100.00	
						249.700)			100.000

Basic Substance CAN Number "Contained in" % Total might at some prime and some pri	MICROCHIP Semiconductor Devic	e Type: EKE 48 TSC	DP 12x20mm (W9)	Termi Co	nation Base opper Alloy ((Alloy: Cu)		Package Homo 8.1 Electronics (e.	ogeneous Materials: g. pc boards, displays	5)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Stim Stim <th< th=""><th>Basic Substance</th><th>CAS Number</th><th>"Contained In" Sub-Component</th><th>% Total Weight</th><th>mg/part</th><th>ppm</th><th>377.31</th><th>(mg) Total</th><th>Mold Compound</th><th>% ot Total Weight</th><th>66.84</th></th<>	Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	377.31	(mg) Total	Mold Compound	% ot Total Weight	66.84
Encode Remin Trade Scient Media Compound 6.511 22.201 65.151 Carbon Black Table 5cont Media Compound 6.011 2.203 6.111 1.30 1.275 1.700 1.300 1.275 1.700 1.300 1.175 1.700 1.300 1.10 1.40 1.60 1.275 1.700 1.300 1.10 1.10 1.10 1.10 1.10 1.10 1.10 1.10 1.10 1.10 1.10 1.10 1.10 1.10 1.10 1.10 <	Silica vitreous (or fused)	60676-86-0	Mold Compound	56 814	320 715	568 140	EME-G700	Silica, vitreous (or fused)	60676-86-0	85.00	
Phenolic Resin Totale Securet Media Compound 4.010 22.838 4.01.04 Cablos Blad Totale Securet Totale Securet 0.00 Copper 74.40.25.8 Lasel Frame 0.228.27 12.312 20.016 Total 12.33 20.016 Magnetalian 74.40.25.4 Lasel Frame 0.028 0.150 228.27 12.312 20.016 Total 12.43 0.035 Magnetalian 74.40.25.4 Losel Frame 0.028 0.150 228.27 12.32 12.43 12.43 12.44 <t< td=""><td>Epoxy Resin</td><td>Trade Secret</td><td>Mold Compound</td><td>5.815</td><td>32.826</td><td>58,151</td><td></td><td>Epoxy Resin</td><td>Trade Secret</td><td>8.70</td><td></td></t<>	Epoxy Resin	Trade Secret	Mold Compound	5.815	32.826	58,151		Epoxy Resin	Trade Secret	8.70	
Choice 1333 86-4 Mold Group 0.201 1.132 2000 Concerneds Use Concerneds	Phenolic Resin	Trade Secret	Mold Compound	4.010	22.639	40,104		Phenolic Resin	Trade Secret	6.00	
Copper 7440-50-5 Last Frame 26.052 152.312 668.815 Tue Tue 10000 Nickel 7440-62-0 Last Frame 0.127 0.120 1.275 67.025 4.062 7420-62-3 95.24 Silver 7440-62-3 Last Frame 0.0127 0.120 1.275 67.025 4.062 7420-62-3 95.24 Silver 7440-62-3 Last Frame 0.012 2.666 47.62 95.24	Carbon Black	1333-86-4	Mold Compound	0.201	1.132	2,005		Carbon Black	1333-86-4	0.30	
Nokal 7440-02-0 Laad Frame 0.720 4.062 7.196 119.82 Imm Total Least Frame 5.02 Teal Wink 2.83 Teal Magnetium 7420-013 Laad Frame 0.128 0.100 228 0.127 Column 0.128 A	Copper	7440-50-8	Lead Frame	26.982	152.312	269,818			Total	100.00	
Silten 7440/21-3 Lead Frame 0.127 0.720 1.275 6783 + Ag Magnetium 7459/544 Lead Frame 0.027 0.726 283 Silver 7440/234 Lead Frame 0.027 2.568 4.723 0.06 283 Silver 7440/244 Lead Frame 0.017 0.064 4.723 0.06 1016 0.000 100.00	Nickel	7440-02-0	Lead Frame	0.720	4.062	7,196	159.92	(mg) Total	Lead Frame	% of Total Weight	28.33
Image: Note of the second se	Silicon	7440-21-3	Lead Frame	0.127	0.720	1.275	C7025 + Ag	Copper	7440-50-8	95.24	
Silver 744022-4 Lead Frame 0.472 2.669 4.725 Silver 744022-4 Die Attach 0.038 1/16 3.06 1/16 3.06 Construction 744027-3 Die Attach 0.038 0.76 0.46 0.16 0.06 0.16 0.	Magnesium	7439-95-4	Lead Frame	0.028	0.160	283		Nickel	7440-02-0	2.54	
Silver 7440324 Die Attach 0.304 1716 3.040 Epsy Rein Tidd Serter Die Attach 0.056 0.360 7440 0.57 Copper 7440,5243 Die Attach 0.011 0.064 114 Teta 100.00 Die Cold 7440,5243 Die Attach 0.011 0.064 114 Teta 100.00 Die Cold 7440,5243 Die Attach 0.011 0.054 114 Teta 100.00 100 0.011 0.054 114 Teta 100.00 100 0.011 0.054 100.00 0.011 0.054 100.00 0.011 0.000 0.011 0.000 0.011 0.000	Silver	7440-22-4	Lead Frame	0.473	2.669	4,728		Silicon	7440-21-3	0.45	
Epoy Resn Tode Seret Die Attach 0.0365 0.385 646 Sker 1402-24 167 Silicon 7440-213 Chip (Die) 1.380 7.700 13.800 2.15 rm3 Total Die Attach % Vor Total Weight 0.385 646 Vor Total Weight 0.385 Mode 7440-224 80.00 3.90 2.15 rm3 Total Die Attach % Vor Total Weight 0.386 3.00 1.05.24 27.500 155.24 27.500 155.24 27.500 100.00 56.450 1.000.00 56.450 1.000.00 160.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 1.380 7.79 (mg) Total 0.000 100.00 100.00 1.380 1.000 100.00 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000<	Silver	7440-22-4	Die Attach	0.304	1.716	3.040		Magnesium	7439-95-4	0.10	
Copper 7440-50-8 Die Attach 0.011 0.064 114 Total 100.00 Biscon 7440-57-5 Wire Bond 0.330 7.70 13.80 2.15 Pie Attach % Total Weight 0.380 Tin 7440-57-5 Wire Bond 0.320 1.806 3.200 840 Site: 7440-52-4 80.00 Tin 7440-57-5 Wire generated late provided in the second state of the second state state of the second state t	Epoxy Resin	Trade Secret	Die Attach	0.065	0.365	646		Silver	7440-22-4	1.67	
Silicon 7440 213 Chip Dies 1.380 7.790 13.800 2.15 Find Teal Die Attach % of Teal Weight 0.38 Tin 7440 251-5 Nugurassent was prior. Number of the transmission of the transmissis transmission of the transmission transmissis tra	Copper	7440-50-8	Die Attach	0.011	0.064	114	1		Total	100.00	a
Donel Gold 7440-27-5 Wite Bond 0.320 15.08 3.200 Th 7440-31-5 Filling neuronization provides 27.501 15.52 27.500 100.000 564.500 1.000.000 564.500 1.000.000 764.52.9 3.00 100.000 This semiconductor device and its homogenous materials company with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Resas Directive) and with 20 Directives 2002/95/EC (RoHS Directive), EU Directive 2001/65/EU (RoHS Resas Directive) and with 20 Directives 2001/95/EU (RoHS Resas Directive) and with 20 Directives 20 Directives and section 20 Directives 2001/95/EU (RoHS Resas Directive) and 20 Directives 2001/95/EU (RoHS Resas Directive) and 20 Directives	Silicon	7440-21-3	Chip (Die)	1.380	7.790	13,800	2.15	(mg) Total	Die Attach	% of Total Weight	0.38
Tim 7440-31-5 Participic neuronal bala projest. Many Transmission Torrespondent to the transmission of the second provided in the second provided provector provided provector provided provided provect	Doped Gold	7440-57-5	Wire Bond	0.320	1.806	3.200	8340	Silver	7440-22-4	80.00	
OTALS: 100.000 564.500 1,000.000 Copper 7.440.50-8 3.00 Total Mass Total Mass Total 100.000 Total Structure (Copper 7.440.50-8 3.00 Total Mass Total 100.000 Total Structure (Copper 7.440.50-8 3.00 Total Structure (Copper 7.440.50-8 3.00 Total Structure (Copper 7.440.50-8 Total 100.00 Total Structure (Copper 7.440.50-8 3.00 Total Structure (Copper	Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.750	15.524	27.500		Epoxy Resin	Trade Secret	17.00	
O.5645 g Total Mass Total Total This semiconductor device and its homogenous matrials comply with EU Directive 202/35/EC (End-f-Life Vehicles (ELV) Directive), EU Directive 202/35/EC (End-f-Life Vehicles (ELV) Direc			TOTALS:	100.000	564.500	1,000,000		Copper	7440-50-8	3.00	
This semiconductor device and its homogenous materials comply with EU Directive 20219/SFC (Rolds Directive), EU Directive 20219/SFC (Rolds Directive 20219/SFC (Rolds Directive), EU Directive 20219/SFC (Rolds Directive 20219/SFC (Rolds Directive), EU Directive 20219/SFC (Rolds Directive 20219/SFC (Rolds Directive), EU Directive 20219/SFC (Rolds Directive 20219/SFC (Rolds Directive), EU Directive 20219/SFC (Rolds Directive 2021		0 5645	n Total Mass						Total	100.00	1
Compliance with the above EU Directives has been vertified via internal design controls, supplier doctariations, and /or analytical test data. Doped Silicon 7440-21-3 100_0 Technology 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 above, the chemical	This semiconductor device and its homogenous materials EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Direct	comply with EU Directive 2 ive).	002/95/EC (RoHS Directive), EU Directive 2011/65	5/EU (RoHS R	ecast Directiv	ve) and with	7.79	(mg) Total	Chip (Die)	% of Total Weight	1.38
if 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 Total 100.00 Prechnology Incorporated's knowledge and belief as of the devicement, three is no credible reason to believe that the unavoidable impurity concentration of the schemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Wolding 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 threft "in which the specific product is shipped are made from polyvinyl choride (PVC) plastic. "Window envelopes" used to hold the packing slip on the user y reliance on the ranges provided in Microchip Technology Incorporated's knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated's semiconductor royrided in Material Safety Data Sheets provided by suppliers. Tupplier information is often protected from disclosure as trade screts and some information material subpliers. Information is provided on yaterative services in their services in their service on their service o	Compliance with the above EU Directives has been verified	i via internal design control	s, supplier declarations, and /or analytical test da	ata.			Doped Silicon	Silicon	7440-21-3	100	
Initial components used by microchip meet microbing industries/chemicals/plastics/ 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Wire Bond % of Total Weight 0.32 Initial (ung) Total Initial (ung) Total Initial (ung) Total Initial (ung) Total Initial (ung) Total <th>f a chemical substance is absent from the list above, the c Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of re</th> <th>hemical substance is NOT a date of this document, then egulatory concern for any re</th> <th>an intentional ingredient in the semiconductor de e is no credible reason to believe that the unavoi egulatory scheme world-wide.</th> <th>evice and, to t dable impurit</th> <th>the best of Mi y concentration</th> <th>crochip on of the</th> <th></th> <th></th> <th>Total</th> <th>100.00</th> <th></th>	f a chemical substance is absent from the list above, the c Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of re	hemical substance is NOT a date of this document, then egulatory concern for any re	an intentional ingredient in the semiconductor de e is no credible reason to believe that the unavoi egulatory scheme world-wide.	evice and, to t dable impurit	the best of Mi y concentration	crochip on of the			Total	100.00	
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. Wicrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor fevices 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 anont guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Microchip Technology Incorporated ay raw material suppliers. Supplier information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic arets. Wicrochip Technology Incorporated does not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished arrs. Wicrochip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are rovided in Microchip's quotations, sales order acknowledgement, and invoices. Wicrochip 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 (SGS) or of this Certificate of Compliance for semiconductor products. Total 100.00	http://ul.com/global/eng/pages/offerings/industries/chemic	als/plastics/	lastics. You can access the OL IQIM family of da	itabases to of	otain a test re	port at	1.81	(mg) Total	Wire Bond	% of Total Weight	0.32
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 by subcontract garante 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 and raw material suppliers. Information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is 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. Wicrochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited in Microchip's quotations, sales order acknowledgement, and invoices. Wicrochip 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, nonsequential 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 hird parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent hird parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent hird parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent hird parties as a result of the users' reliance on the informatio	The protective "tubes" in which the specific product is shi outer box and certain "reels" may be made from PVC plas	oped are made from polyvir ic.	yl chloride (PVC) plastic. "Window envelopes" u	sed to hold t	ne packing sl	ip on the		Doped Gold	7440-57-5	100.00	
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.	Microchip Technology Incorporated believes the informati devices in their original packing materials is true and corro cannot guarantee the completeness and accuracy of data by raw material suppliers. Supplier information is often pro assemblers and raw material suppliers. Information is prov metals components. These estimates do not include trace parts.	on in this form concerning s ect to the best of its knowled n this form because it has b otected from disclosure as t vided only as estimates of th levels of dopants, metals, a	substances restricted by RoHS in Microchip Tech dge and belief, as of the date listed in this form. In seen compiled based on the ranges provided in In rade secrets and some information may not have he average weight of these parts and the average and non-metal materials contained within silicon of	nnology Incor Aicrochip Teo Aaterial Safet been provid weight of an devices (silic	porated's ser chnology Inco y Data Sheets led by subcor ticipated sigr on IC) in the f	niconductor orporated s provided ntract nificant toxic inished			Total	100.00	
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 hird party test reports (SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Inc provided in Microchip's quotations, sales order acknowled	warranty, express or implie orporated and its subsidiari gement, and invoices.	d, with respect to the information provided in this es are contained in Microchip's standard terms a	s declaration. and condition	The exclusiv s of sale. The	e, limited se are	15.52	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.75
Total 100.00	Microchip disclaims any duty to notify users of updates or consequential or otherwise, suffered by users or third part third party test reports (SGS) or of this Certificate of Comp	changes to Material Conter ies as a result of the users' liance for semiconductor pr	nt Declarations and shall not be liable for any dan reliance on the information in Material Content D roducts.	nages, direct eclarations (l	or indirect, MCD) or inde	pendent		Tin	7440-31-5	100.00	
									Total	100.00	•

	e: TO and ZB 0	13 (Lead) TO-92 (A2 / AU)	Termii Co	nation Base A pper Alloy (C	Alloy: :u)		Package Hom 8.1 Electronics (e	ogeneous Materials: .g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total				() , ()			
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	114.11	(mg) Total	Mold Compound	% of Total Weight	56.77
Silica, vitreous	60676-86-0	Mold Compound	48.255	96.992	482,545	EME-G600	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.477	6.989	34,772		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.477	6.989	34,772	_	Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.391	2.796	13,909	_	Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.170	0.342	1,703	-	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	38.024	76.428	380,239			Total	100.00	
lron	7439-89-6	Lead Frame	0.935	1.880	9,353	80.00	(mg) Total	Lead Frame	% of Total Weight	39.8
Silver	7440-22-4	Lead Frame	0.758	1.524	7,582	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.050	0.100	498	-	Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.033	0.066	328	-	Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.066	0.134	664	-	Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.017	0.034	169	-	Phosphorous	//23-14-0	80.0	
Bhanalia bardanar	02 00 6	Die Attach	0.000	0.011	37	0.40	(mm) T-1-1	I otal	100.00	0.00
Phenolic hardener	92-00-0	Die Allach	0.000	0.001	3	0.18	(mg) I otal	Die Attach	% of Total Weight	0.09
Butyl cellosolye acetate	112-07-2	Die Attach	0.001	0.001	7	CRM-1076DJ	Silvor	7440-22-4	74	
Silicon	7//0-21-3	Chip (Die)	0.001	1.608	8 000	-	Epoyy Resin	7440-22-4	10	
Gold	7440-21-5	Wire Bond	0.000	0.080	400	t	Butyl phenyl alycidyl ether	3101-60-8	6	
Tin	7440-31-5	Plating on external leads (nins) - Matte Tin / annealed at 150°C for 1 hour	2 500	5.025	25,000	· `	Phenolic hardener	92-88-6	0	
100	1440 01 0	TOTALS:	100.000	201,000	1,000,000	-	Butyl cellosolye acetate	112-07-2	1	
	0 2010	a Total Mass	100.000	201.000	1,000,000		Dutyl cellosofve acctate	Total	100.00	L
This semiconductor device and its homogenous materials com Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via i	ply with EU Directiv	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	1.61	Total (mg)	Chip (Die)	% of Total Weight	0.8
		,,,,,,,,,						Total	100.00	
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula	cal substance is No of this document, t tory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide.	e and, to the b le impurity cor	est of Microch	hip the			l	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamn http://ul.com/global/eng/pages/offerings/industries/chemicals/p	hability standard fo lastics/	r plastics. You can access the UL IQTM family of databa	ses to obtain a	i test report a	t	0.08	(mg) Total	Wire Bond	% of Total Weight	0.04
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concernin the best of its know ecause it has been disclosure as trade s of the average we and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been pro- gight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ty Data Sheets rided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by ontract assem oxic metals co s.	ductor ated cannot raw blers and omponents.			Total	100.00	<u>.</u>
Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpor in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid voices.	blied, with respect to the information provided in this de iaries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	5.03	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.5
Microchip disclaims any duty to notify users of updates or chan otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Con sers' reliance on the oducts.	tent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or in independent ti	direct, consec hird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	
						201 000				100.000

Semiconductor Device Type: AB 03 (Lead) TO-220 (F8) Basic Substance CAS Number Sub-Component			Termir Co	nation Base / pper Alloy (C	llloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: •.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basis Substance	CAC Number	"Contained In"	% Total Weight	un a la cut		536.44	(mg) Total	Mold Compound	% ot Total Weight	28.38
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm	CEL-			•	
Fused Silica	60676-86-0	Mold Compound	24.974	472.066	249,744	9240HF10	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
						HCL-12S +				
Silver	7440-22-4	Lead Frame	1.340	25.325	13,398	Ag	Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.063	1.187	628	4	Tin	7440-31-5	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.015	0.280	148		Silver	7440-22-4	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.002	0.045	24			Total	100.00	
Silicon	7440-21-3	Chip (Die)	0.600	11.341	6,000	1.51	(mg) Total	Die Attach	% of Total Weight	0.08
Gold	7440-57-5	Wire Bond	0.050	0.945	500	84-1LMISR4	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							Trade Secret	3	
	1.8902 g Total Mass							Total	100.00	•
This semiconductor device and its homogenous materials co Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	omply with EU Directiv	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (F	RoHS Recast	Directive) an	d with EU	11.34	Total (mg)	Chip (Die)	% of Total Weight	0.6
Compliance with the above EU Directives has been verified v	a internal design cont	rols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
								Total	100.00	
If a chemical substance is absent from the list above, the che Technology Incorporated's knowledge and belief as of the da chemical substance, if any, is not below the threshold of regu	mical substance is NC te of this document, th latory concern for an	DT an intentional ingredient in the semiconductor device - here is no credible reason to believe that the unavoidable y regulatory scheme world-wide.	and, to the be impurity cor	est of Microch acentration of	iip the				100.00	
Molding compounds used by Microchip meet the UL94 V0 fla http://ul.com/global/eng/pages/offerings/industries/chemical:	mmability standard fo s/plastics/	r plastics. You can access the UL iQTM family of database	es to obtain a	i test report a	t	0.95	(mg) Total	Wire Bond	% of Total Weight	0.05
The protective "tubes" in which the specific product is shipp box and certain "reels" may be made from PVC plastic.	ed are made from poly	rvinyl chloride (PVC) plastic. "Window envelopes" used to	o hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this forn material suppliers. Supplier information is often protected fr raw material suppliers. Information is provided only as estim These estimates do not include trace levels of dopants, meta	in this form concernin to the best of its know n because it has been om disclosure as trade ates of the average we ls, and non-metal mat	ng substances restricted by RoHS in Microchip Technolog vledge and belief, as of the date listed in this form. Microc compiled based on the ranges provided in Material Safety e secrets and some information may not have been provid ight of these parts and the average weight of anticipated erials contained within silicon devices (silicon IC) in the f	gy Incorporat chip Technolo y Data Sheets ded by subco significant to inished parts	ed's semicor ogy Incorpora provided by intract assem oxic metals co	ductor ated cannot raw blers and omponents.			Total	100.00	-
Microchip Technology Incorporated does not provide any wa product warranties provided by Microchip Technology Incorp in Microchip's quotations, sales order acknowledgement, and	rranty, express or imp porated and its subsid I invoices.	lied, with respect to the information provided in this decl aries are contained in Microchip's standard terms and co	laration. The onditions of s	exclusive, lim ale. These ar	ited e provided	10.59	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.56
Microchip disclaims any duty to notify users of updates or ch otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	anges to Material Con users' reliance on the products.	tent Declarations and shall not be liable for any damages e information in Material Content Declarations (MCD) or in	s, direct or ind adependent th	direct, consect nird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	2
						1.890,200				100.000

MICROCHIP Semiconductor Device Ty	pe: AT 05 (Lead) TO	-220 (B8)	Termir Co	ation Base A oper Alloy (C	Alloy: u)		Package Horr 8.1 Electronics (d	nogeneous Materials: e.g. pc boards, display	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			500.00				00.50
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	526.92	(mg) I otal	Mola Compound	% ot Total Weight	26.56
Fused Silica	60676-86-0	Mold Compound	23.373	463.693	233,728	CEL- 9240HF10	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	1		Total	100.00	
Tin	7440-31-5	Lead Frame	0.110	2 361	1 1 1 9 0	1420 70	(mg) Total	Lood Fromo	% of Total Waight	70.40
	7440-31-5	Lead I fame	0.113	2.301	1,130	1430.79	(ing) rotai	Leau Flaine	% OF TOTAL Weight	72.12
Cilver	7440.00.4	Lood Fromo	1 074	27.257	10 700	HUL-125 +	0	7440 50 0	07.00	
Silver (Ar)	7440-22-4	Dia Attach	0.071	21.237	707	Ag	Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.071	1.402	107		lin	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	I rade 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
						84-				
Gold	7440-57-5	Wire Bond	0.040	0.794	400	1LMISR4	Silver (Ag)	7440-22-4	79	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.570	11.308	5,700		Proprietary Resin	Trade Secret	19	
		TOTALS:	100.000	1,983.900	1,000,000	Proprietary	Curing agent & Hardener	Trade Secret	3	
	1.9839 a To	tal Mass						Total	100.00	
This semiconductor device and its homogenous materials co Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified vi	mply with EU Directive 2002 a internal design controls, s	/95/EC (RoHS Directive), EU Directive 2011/65/EU upplier declarations, and /or analytical test data.	(RoHS Recast	Directive) and	d with EU	12.30	Total (mg) Doped Silicon	Chip (Die) 7440-21-3 Total	% of Total Weight 100 100.00	0.62
Technology Incorporated's knowledge and belief as of the dat chemical substance, if any, is not below the threshold of regu	e of this document, there is latory concern for any regu	no credible reason to believe that the unavoidabl latory scheme world-wide.	e impurity cor	centration of	the					
Molding compounds used by Microchip meet the UL94 V0 flar http://ul.com/global/eng/pages/offerings/industries/chemicals	nmability standard for plast /plastics/	ics. You can access the UL iQTM family of databa	ses to obtain a	test report a	t	0.79	(mg) Total	Wire Bond	% of Total Weight	0.04
The protective "tubes" in which the specific product is shippe box and certain "reels" may be made from PVC plastic.	ed are made from polyvinyl	chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
								Total	100.00	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this form material suppliers. Supplier information is often protected fro raw material suppliers. Information is provided only as estim-	in this form concerning sub to the best of its knowledge because it has been compi m disclosure as trade secre ates of the average weight o	stances restricted by RoHS in Microchip Technold, and belief, as of the date listed in this form. Micro led based on the ranges provided in Material Safe ts and some information may not have been prov f these parts and the average weight of anticipate	ogy Incorporat ochip Technolo ty Data Sheets rided by subco d significant to	ed's semicon ogy Incorpora provided by ntract assem xic metals co	ductor ated cannot raw blers and omponents.					
mese estimates do not include trace levels of dopants, metal	s, and non-metal materials (contained within silicon devices (silicon IC) in the	misned parts	•						
Microchip Technology Incorporated does not provide any war product warranties provided by Microchip Technology Incorp in Microchip's quotations, sales order acknowledgement, and	ranty, express or implied, w orated and its subsidiaries a invoices.	ith respect to the information provided in this dee are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	iited e provided	11.31	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.57
Microchip disclaims any duty to notify users of updates or ch otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	anges to Material Content D users' reliance on the infor products.	eclarations and shall not be liable for any damage nation in Material Content Declarations (MCD) or i	es, direct or ind independent th	lirect, conseq ird party test	uential or reports		Tin	7440-31-5	100.00	
						ľ		Total	100.00	
						1 083 000				100 000
						1,303.300				100.000

MICROCHIP Semiconductor Device	Type: PT 32 (Lead) TQF	P 7x7x1mm (T5)	Termin Coj	ation Base A oper Alloy (C	lloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: a.g. pc boards, display	/s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total			269.96	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm		0.11	00070 00 0	05.00	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	229.469	678,300	EME-G700	Silica, vitreous (or fused)	60676-86-0 Teads Cases	85.00	
Epoxy Resin	Trade Secret	Mold Compound	6.943	23.487	47 990	-	Epoxy Resin Phonolic Rosin	Trade Secret	8.70	
Carbon Black	1333-86-4	Mold Compound	4.700	0.810	2 304	-	Carbon Black	1222.96.4	0.00	1
Connor	7440 50 9	Lood Fromo	10.233	24 602	102.394	-	Calboli Diack	Total	100.00	4
Tin	7440-30-8	Lead Frame	0.026	0.080	263	25.52	(mg) Total	I oldi	9/ of Total Waight	10.5
101	7440-31-3	Leau Traine	0.020	0.003	205	33.32	(ilig) Total	Leau Flaine		10.5
Silver	7440-22-4	Lead Frame	0.200	0.677	2 000	EFIEC641 +	Coppor	7440-50-9	07.42	
Zinc	7440-62-4	Lead Frame	0.200	0.064	2,000	Ag	Tin	7440-30-6	0.25	
Chromium	7440-00-0	Lead Frame	0.076	0.089	263	-	Silver	7440-31-5	1.01	
Silver (Ag)	7440-47-5	Die Attach	0.623	2 106	6 225	-	Zinc	7440-22-4	0.18	
	Trade Secret	Die Attach	0.023	0.228	675	-	Chromium	7440-00-0	0.10	
EPOXY RESIN	Trade Secret	Die Attach	0.060	0.203	600	-	Ontoinian	Total	100.00	
Silicon	740-21-3	Chin (Die)	7 500	25 373	75.000	2.54	(mg) Total	Die Attech	% of Total Weight	0.75
Gold	7440-21-5	Wire Bond	0.200	25.575	2,000	2.34	(iiig) Total	7440.02.4		0.75
Gold	7440-37-5	Wile Bolig	1.250	4.220	12,000	3230		Trada Saarat	0	1 1
1111	7440-31-5 Plaun	g on externar leads (pins) - Matternin/ annealed at 150°C for Thour	100 000	338 300	1 000 000			Trade Secret	9	1 1
	0 0000 m T	IOTALS.	100.000	550.500	1,000,000		LFOAT KLOIN	Tatel	100.00	4
This semiconductor device and its homogenous materials 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 of Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of r Molding compounds used by Microchip meet the UL94 V0 http://ul.com/global/eng/pages/offerings/industries/chemi The protective "tubes" in which the specific product is shi box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the informati devices in their original packing materials is true and corr guarantee the completeness and accuracy of data in this f material suppliers. Supplier information is often protected raw material suppliers. Supplier information is often protected	comply with EU Directive 200 d via internal design controls, i chemical substance is NOT an date of this document, there is egulatory concern for any regu flammability standard for plas cals/plastics/ apped are made from polyvinyl on in this form concerning sul ect to the best of its knowledgy orm because it has been comp from disclosure as trade secr	2/95/EC (RoHS Directive), EU Directive 2011/65/EU supplier declarations, and /or analytical test data. intentional ingredient in the semiconductor device is no credible reason to believe that the unavoidabl latory scheme world-wide. tics. You can access the UL iQTM family of databa chloride (PVC) plastic. "Window envelopes" used postances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micr iled based on the ranges provided in Material Safe ets and some information may not have been prov of these parts and the average weight of anticipate	(ROHS Recast e and, to the be le impurity con uses to obtain a to hold the pa ogy Incorporat ochip Technolo ety Data Sheets vided by subco	Directive) and est of Microch centration of test report at cking slip on ed's semicon ogy Incorpora provided by ntract assemi	ip the the outer ductor ted cannot raw blers and mponents.	0.68	Total (mg) Doped Silicon (mg) Total Doped Gold	Chip (Die) 7440-21-3 Total Wire Bond 7440-57-5 Total	% of Total Weight 100 100.00 % of Total Weight 100 100.00	0.2
These estimates do not include trace levels of dopants, m Microchip Technology Incorporated does not provide any product warranties provided by Microchip Technology Inc in Microchip's quotations, sales order acknowledgement, Microchip disclaims any duty to notify users of updates or otherwise, suffered by users or third parties as a result of (SGS) or of this Certificate of Compliance for semiconduct	etals, and non-metal materials warranty, express or implied, orporated and its subsidiaries and invoices. changes to Material Content E the users' reliance on the infor tor products.	contained within silicon devices (silicon IC) in the with respect to the information provided in this de are contained in Microchip's standard terms and c eclarations and shall not be liable for any damage mation in Material Content Declarations (MCD) or	e finished parts claration. The e conditions of s es, direct or ind independent th	exclusive, lim ale. These are lirect, conseq ird party test	ited provided uential or reports	4.23	(mg) Total Tin	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour 7440-31-5 Total	% of Total Weight 100.00 100.00	1.25
						338.300				100.000

MICROCHIP Semiconductor Device Type:	PT 44 (Lead)	TQFP 10x10x1mm (T4)	Termin Cop	ation Base A oper Alloy (C	lloy: u)		Package Homo 8.1 Electronics (e.	geneous Materials: g. pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
		"Contained In"	% Total							
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	218.09	(mg) Total	Mold Compound	% of Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	189.545	693,542	SG-8300ECM	Silica, vitreous	60676-86-0	86.91	
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	
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	C7025 + Ag	Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.129	473	1 -	Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.011	0.029	105		Silver	7440-22-4	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.600	1.640	6,000		Silicon	7440-21-3	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.410	1,500		Magnesium	7439-95-4	0.10	
Silicon	7440-21-3	Chip (Die)	7.500	20.498	75,000			Total	100.00	_
Gold	7440-57-5	Wire Bond	0.200	0.547	2,000	2.05	(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	3.416	12,500	3280	Silver (Ag)	7440-22-4	80	
		TOTALS:	100.000	273.300	1,000,000	A	crylate Urethane Oligomer	General	20	
	0.2733	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials compl Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	y with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	20.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via in	ternal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulate	al substance is No this document, t ry concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidably y regulatory scheme world-wide.	and, to the be e impurity con	st of Microch centration of	ip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard fo stics/	or plastics. You can access the UL iQTM family of databas	ses to obtain a	test report at	t	0.55	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	re made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	king slip on	the outer		Doped Gold	7440-57-5	100	
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 material suppliers. Supplier information is often protected from or raw material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metals, a	his form concerni the best of its know cause it has been lisclosure as trad of the average w and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wiedge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorporate ochip Technolo ty Data Sheets ided by subco I significant to finished parts	ed's semicon gy Incorpora provided by ntract assemi xic metals co	ductor ated cannot raw blers and mponents.			Total	100.00	2
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorporat in Microchip's quotations, sales order acknowledgement, and inv	ty, express or imp ed and its subsid oices.	blied, with respect to the information provided in this dec iaries are contained in Microchip's standard terms and c	laration. The o	exclusive, lim ale. These are	ited e provided	3.42	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor prod	es to Material Cor rs' reliance on th lucts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	s, direct or inc ndependent th	irect, conseq ird party test	uential or reports		Tin	7440-31-5	100.00	
							<u></u>	Total	100.00	4

273.300

	DT 64 (1)	TOER (syndrome and	Termir Co	nation Base A pper Alloy (C	uloy: u)		s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3		
Semiconductor Device Type.	FI 04 (Lead)	IQFF 10x10x1mm (V2)		1	1					65
		"Contained In"	% Total			228.79	(mg) Total	Mold Compound	% ot Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm		(5,			
Silica, vitreous	60676-86-0	Mold Compound	69.354	198.838	693,542	SG-8300ECM	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	Mola Compouna	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	C7025 + Ag	Conner	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.173	0.302	473		Nickel	7440-00-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.047	0.030	105	-	Silver	7440-22-4	1.67	
Silver (Ag)	7405 30 4	Die Attach	0.600	1 720	6,000		Silicon	7440-21-3	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.000	0.430	1,500	-	Magnesium	7439-95-4	0.40	
Silicon	7440-21-3	Chip (Die)	7 500	21 503	75.000	-	magnoolam	Total	100.00	
Gold	7440-21-5	Wire Bond	0.200	0.573	2,000	2.45	(mg) Total	Die Attech	% of Total Waight	0.75
Tin	7440-31-5	Disting an extremely locate (size) Matter Tip (second at 450%) (see 4 hours	1.250	2 594	12,000	2.10	(ing) rotal	7440.00 A		0.75
101	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	286 700	12,500	3280	Silver (Ag)	7440-22-4 Gonoral	80	
	0.2867 g Total Mass						crylate ofernane oligomer	General	20	
	0.2867	g Total Mass						I otal	100.00	
This semiconductor device and its homogenous materials compl Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	iconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with E 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						Total (mg)	Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via in	ternal design con	rols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemic: Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulator	al substance is No this document, t ry concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidabl y regulatory scheme world-wide.	e and, to the be le impurity cor	est of Microch	ip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard fo stics/	r plastics. You can access the UL iQTM family of databa	ses to obtain a	a test report at	t	0.57	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	re made from pol	vinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
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- material suppliers. Supplier information is often protected from or raw material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metals, a	his form concerning the best of its known cause it has been lisclosure as trade of the average wo nd non-metal mat	ng substances restricted by RoHS in Microchip Technolo vledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe secrets and some information may not have been prov sight of these parts and the average weight of anticipated erials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ty Data Sheets rided by subco d significant to finished parts	ed's semicon ogy Incorpora s provided by ontract assemi oxic metals co S.	ductor tted cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any warran product warranties provided by Microchip Technology Incorporat in Microchip's quotations, sales order acknowledgement, and inv	ty, express or imp ed and its subsid oices.	lied, with respect to the information provided in this dec aries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	3.58	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor proc	es to Material Con rs' reliance on the lucts.	tent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	es, direct or ind independent th	direct, conseq nird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100 00	ш —
						286 700		rotar	.00.00	100 000

Міскоснір	Semiconductor Device Type: PT 64 (Lead) TQFP 14x14x1mm (V3 / VH)				lloy: u)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Ty	pe: PI 64 (Lead)	IQFP 14x14x1mm (V3 / VH)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	ma/part	nnm	289.33	(mg) Total	Mold Compound	% ot Total Weight	53.58
Silica vitroous (or fused)	60676-86-0	Mold Compound	45 543	245 032	455 430	EME-C700	Silica vitreous (or fused)	60676-86-0	85.00	7
Enony Resin	Trade Secret	Mold Compound	4 661	25 172	46 615	LWIL-0700	Enoxy Resin	Trade Secret	8 70	
Depolic Resin	Trade Secret	Mold Compound	3 215	17 360	32 1/8	1	Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.161	0.868	1 607	1	Carbon Black	1333-86-4	0.00	
Carbon Black	7440 50 9	Lood Fromo	22 201	174 956	222.907	1	Calboll Diack	Total	0.00	
Copper	7440-50-6	Lead Frame	0.092	0.440	323,007	470.50	() T = 4 = 1	I otal	100.00	00.04
111	7440-31-5	Lead Frame	0.065	0.449	031	1/9.50	(mg) i otal	Lead Frame	% of Total Weight	33.24
Citure	7440.00.4	Logid France	0.000	0.440	0.000	EFTEC64T +		7440 50 0	07.40	
Silver	7440-22-4	Lead Frame	0.633	3.419	6,332	Ag	Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.060	0.323	598		Lin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.083	0.449	831		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	1.129	6.096	11,288		Zinc	7440-66-6	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.122	0.661	1,224		Chromium	7440-47-3	0.25	
EPOXY RESIN	Trade Secret	Die Attach	0.109	0.588	1,088			Total	100.00	
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	3230	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	a Total Mass			,,			Total	100.00	
	0.5400	y Tolai Mass						Total	100.00	
This semiconductor device and its homogenous materials con Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directi	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	56.92	Total (mg)	Chip (Die)	% of Total Weight	10.54
Compliance with the above EU Directives has been verified via	a internal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
								Total	100.00	
If a chemical substance is absent from the list above, the cher Technology Incorporated's knowledge and belief as of the dat chemical substance, if any, is not below the threshold of regu	nical substance is N e of this document, t latory concern for ar	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable y regulatory scheme world-wide.	e and, to the be e impurity cor	est of Microch centration of	the					
Molding compounds used by Microchip meet the UL94 V0 flan http://ul.com/global/eng/pages/offerings/industries/chemicals	nmability standard fo /plastics/	or plastics. You can access the UL iQTM family of databas	ses to obtain a	test report a	t	1.84	(mg) Total	Wire Bond	% of Total Weight	0.34
The protective "tubes" in which the specific product is shippe box and certain "reels" may be made from PVC plastic.	d are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information i devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this form material suppliers. Supplier information is often protected fro raw material suppliers. Information is provided only as estima These estimates do not include trace levels of dopants, metals	n this form concerni to the best of its kno because it has been m disclosure as trad ttes of the average w s, and non-metal ma	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipatec terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technol ty Data Sheets rided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by ntract assem xic metals co	ductor Ited cannot raw blers and mponents.			Total	100.00	-
Microchip Technology Incorporated does not provide any war product warranties provided by Microchip Technology Incorpo in Microchip's quotations, sales order acknowledgement, and	ranty, express or imporated and its subsid invoices.	blied, with respect to the information provided in this dec liaries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	5.08	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.94
Microchip disclaims any duty to notify users of updates or cha otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor p	anges to Material Cou users' reliance on th products.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	es, direct or ind independent th	lirect, conseq ird party test	uential or reports		Tin	7440-31-5	100.00	
								Total	100.00	-
						540.000				100.000

			Termi Co	nation Base A pper Alloy (C	Alloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	: PT 80 (Lead)) TQFP 12x12x1mm (X2)								e3
		"Contained In"	% Total			292.63	(mg) Total	Mold Compound	% of Total Weight	79.8
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	252.05	(ing) rotai	mola compound		13.0
Silica, vitreous	60676-86-0	Mold Compound	69.354	254.322	693,542	SG-8300ECM	Silica, vitreous	60676-86-0 Trada Searct	86.91	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	22.444	61,207	-	Phonolic Rosin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	4.076	0.907	2 474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.000	36 671	100.003		Galbon Black	Total	100.00	4
Nickel	7440-02-0	Lead Frame	0.267	0.978	2.667	38.50	(mg) Total	Lead Frame	% of Total Weight	10.5
					,	00.00	(ing) rotai	Edda i raino	// / / / / / / / / / / / / / / / / / /	1010
Silver	7440-22-4	Lead Frame	0.175	0.643	1,752	C7025+ Ag	Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.173	473		Nickel	7440-02-0	2.54]
Magnesium	7439-95-4	Lead Frame	0.011	0.039	105		Silver	7440-22-4	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.600	2.200	6,000		Silicon	7440-21-3	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.550	1,500		Magnesium	7439-95-4	0.10	
Silicon	7440-21-3	Chip (Die)	7.500	27.503	75,000			Total	100.00	
Gold	7440-57-5	Wire Bond	0.200	0.733	2,000	2.75	(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	4.584	12,500	3280	Silver (Ag)	7440-22-4	80	
		TOTALS:	100.000	366.700	1,000,000	A	crylate Urethane Oligomer	General	20	<u> </u>
	0.3667	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ly with EU Directi	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	27.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via in	nternal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemic Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulate Molding compounds used by Microchip meet the UL94 V0 flamm	cal substance is N of this document, t ory concern for ar ability standard fo	OT an intentional ingredient in the semiconductor devic there is no credible reason to believe that the unavoidab ny regulatory scheme world-wide. or plastics. 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 a	hip the t			Total	100.00	
http://ul.com/global/eng/pages/offerings/industries/chemicals/pl	astics/			-		0.73	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	are made from po	lyvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	icking slip on	the outer		Doped Gold	7440-57-5	100	
						-		Total	100.00	
Microchip Technology Incorporated believes the information in t devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form be material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimates These estimates do not include trace levels of dopants, metals, a	his form concerni the best of its kno ecause it has been disclosure as trad s of the average w and non-metal ma	ing substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr i compiled based on the ranges provided in Material Safe le secrets and some information may not have been prov eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the	ogy Incorpora ochip Technol ety Data Sheets vided by subco d significant to finished parts	ted's semicon ogy Incorpora s provided by ontract assem oxic metals co 3.	ductor ated cannot raw blers and omponents.					
Microchip Technology Incorporated does not provide any warrar product warranties provided by Microchip Technology Incorpora in Microchip's quotations, sales order acknowledgement, and inv	nty, express or im Ited and its subsic voices.	plied, with respect to the information provided in this de liaries are contained in Microchip's standard terms and d	claration. The conditions of s	exclusive, lim ale. These are	iited e provided	4.58	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.25
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor pro-	ges to Material Con ers' reliance on the ducts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or	es, direct or in independent t	direct, consec hird party test	uential or reports		Tin	7440-31-5	100.00	
						'		Total	100.00	
						366.700				100.000

			Termir Coj	nation Base A oper Alloy (C	Alloy: :u)		Package Homo 8.1 Electronics (e.	ogeneous Materials: g. pc boards, displays	;)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device T	ype: PF 80 (Lead) TQFF	14x14mm (X3/XE)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	nnm	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	EME-G700	Silica vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.004	26.623	50.042	LINE-0700	Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.451	18.360	34.512		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.173	0.918	1.726		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	31,426	167.187	314.261			Total	100.00	
Tin	7440-31-5	Lead Frame	0.081	0.429	807	171.62	(mg) Total	Lead Frame	% of Total Weight	32.26
						EFTEC64T +	(ing) rotai	Edda Franto	// / / / / / / / / / / / / / / / / / /	02.20
Silver	7440-22-4	Lead Frame	0.615	3.269	6.146	Aa	Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.058	0.309	581		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.081	0.429	807		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.830	4.416	8,300		Zinc	7440-66-6	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.090	0.479	900		Chromium	7440-47-3	0.25	
EPOXY RESIN	Trade Secret	Die Attach	0.080	0.426	800			Total	100.00	
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	3230	Silver (Ag)	7440-22-4	83	
Tin	7440-31-5 Plating	on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.200	6.384	12.000		ANHYDRIDE	Trade Secret	9	
	TOTALS: 100.000 532.000 0.5320 g Total Mass						EPOXY RESIN	Trade Secret	8	
	TOTALS: 100.000 532.000 0.5320 g Total Mass							Total	100.00	
This semiconductor device and its homogenous materials c	U.532U g 10tal Mass device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) a (End-of-Life Vehicles (ELV) Directive).						Total (mg)	Chip (Die)	% of Total Weight	7.65
Compliance with the above EII Directives has been verified v	via internal design controls is	unnlier declarations and /or analytical test data					Doned Silicon	7440-21-3	100	I
Complance war are above to Directives has been verned t	na memaraesign controls, s	applier desidiations, and for analytical test data.					Doped Official	1440 21 3	100	
If a chemical substance is absent from the list above, the che Technology Incorporated's knowledge and belief as of the da chemical substance, if any, is not below the threshold of reg	emical substance is NOT an i ate of this document, there is ulatory concern for any regu	ntentional ingredient in the semiconductor device no credible reason to believe that the unavoidable atory scheme world-wide.	and, to the be impurity con	est of Microch centration of	nip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 fla http://ul.com/global/eng/pages/offerings/industries/chemical	ammability standard for plast s/plastics/	cs. You can access the UL iQTM family of databas	ses to obtain a	test report a	t	1.97	(mg) Total	Wire Bond	% of Total Weight	0.37
The protective "tubes" in which the specific product is shipp box and certain "reels" may be made from PVC plastic.	bed are made from polyvinyl	chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correc guarantee the completeness and accuracy of data in this for material suppliers. Supplier information is often protected fr raw material suppliers. Information is provided only as estim These estimates do not include trace levels of dopants, meta	t in this form concerning sub t to the best of its knowledge m because it has been compi om disclosure as trade secre nates of the average weight o als, and non-metal materials of	stances restricted by RoHS in Microchip Technolo and belief, as of the date listed in this form. Micro led based on the ranges provided in Material Safet ts and some information may not have been provi i these parts and the average weight of anticipated contained within silicon devices (silicon IC) in the	ngy Incorporat Inchip Technolo Ity Data Sheets Ided by subco I significant to finished parts	ed's semicon ogy Incorpora provided by ntract assem xic metals co	ductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any wa product warranties provided by Microchip Technology Incor in Microchip's quotations, sales order acknowledgement, an	arranty, express or implied, w porated and its subsidiaries a d invoices.	ith respect to the information provided in this dec re contained in Microchip's standard terms and co	laration. The onditions of s	exclusive, lim ale. These are	iited e provided	6.38	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	% of Total Weight	1.2
Microchip disclaims any duty to notify users of updates or cl otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	hanges to Material Content De e users' reliance on the inform r products.	eclarations and shall not be liable for any damage nation in Material Content Declarations (MCD) or in	s, direct or inc ndependent th	lirect, conseq ird party test	uential or reports		Tin	7440-31-5	100.00	
						1		Total	100.00	•
						532,000				100.000

PF 80 TQFP

			Termiı Co	nation Base A pper Alloy (C	Alloy: u)		Package Hom 8.1 Electronics (6	ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type	e: PF 100 (Lead	i) TQFP 12x12x1mm (V7)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	SG- 8300ECM	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			Total	100.00	
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	C7025	Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.185	473		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.011	0.041	105		Silver	7440-22-4	1.67	
Silver (Ag)	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	0.10	
Silicon	7440-21-3	Chip (Die)	7.500	29.325	75,000			Total	100.00	
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	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.888	12,500	3280	Silver (Ag)	7440-22-4	80	
		TOTALS:	100.000	391.000	1,000,000		Acrylate Urethane Oligomer	General	20	
	0.3910	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials comp Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	bly with EU Directiv	re 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	29.33	Total (mg)	Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via i	nternal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regulat	cal substance is No of this document, t ory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidabl y regulatory scheme world-wide.	e and, to the b le impurity cor	est of Microch	iip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamn http://ul.com/global/eng/pages/offerings/industries/chemicals/p	ability standard fo astics/	r plastics. You can access the UL iQTM family of databa	ses to obtain a	a test report a	t	0.78	(mg) Total	Wire Bond	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from pol	vvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	icking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in	his form concerni	ng substances restricted by RoHS in Microchip Technolo	ogy Incorporat	ted's semicon	ductor		<u> </u>	Total	100.00	٩
Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpor in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid voices.	lied, with respect to the information provided in this det aries are contained in Microchip's standard terms and c	claration. The conditions of s	exclusive, lim ale. These are	ited e provided	4.89	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25

Microchip disclaims any duty to notify users of updates or 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 (SGS) or of this Certificate of Compliance for semiconductor products.

391.000

Tin

7440-31-5

Total

100.00

100.00

MICROCHIP Semiconductor Device Type	e: PF 100 (Lea	d) TQFP 14x14mm (X5 / EQ)	Termir Co	nation Base A oper Alloy (C	Alloy: :u)		Package Homo 8.1 Electronics (e.	ogeneous Materials: g. pc boards, displays	5)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Pasis Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	malpart	nnm	339.65	(mg) Total	Mold Compound	% ot Total Weight	68.34
Basic Substance	CAS Nulliber	Sub-component	Weight	ing/part	ppin	5NE 0700		00070 00 0	05.00	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	58.089	288.702	580,890	EME-G700	Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.946	29.550	59,456	-	Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.100	20.379	41,004		Phenolic Resin	Irade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.205	1.019	2,050		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	26.156	129.995	261,559			Total	100.00	
Tin	7440-31-5	Lead Frame	0.067	0.334	671	133.44	(mg) Total	Lead Frame	% of Total Weight	26.85
Silver	7440-22-4	Lead Frame	0.511	2 542	5 115	EFTEC64T +	Copper	7440-50-8	97 42	
Zinc	7440-66-6	Lead Frame	0.048	0.240	483	Au	Tip	7440-31-5	0.25	
Chromium	7440-00-0	Lead Frame	0.040	0.240	403	-	Silver	7440-31-5	1.01	
Chromium Cilver (Ag)	7440-47-3	Dia Attach	0.007	0.334	4.014		3iivei	7440-22-4	1.91	
	7440-22-4 Trada Search	Die Attach	0.461	2.393	4,014	-	ZINC	7440-66-6	0.18	
	Trade Secret	Die Attach	0.052	0.259	522	-	Chromium	7440-47-3	0.25	
EPOXY RESIN	Trade Secret	Die Attach Chin (Dia)	0.046	0.231	464		()= ()	l otal	100.00	0.50
Silicon	7440-21-3	Chip (Die)	2.710	13.469	27,100	2.88	(mg) I otal	Die Attach	% of I otal Weight	0.58
Gold	7440-57-5	wife Bond	0.420	2.087	4,200	3230	Silver (Ag)	7440-22-4	83	
liń	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100	5.467	11,000	-	ANHYDRIDE	Irade Secret	9	
		TOTALS:	100.000	497.000	1,000,000		EPOXY RESIN	Trade Secret	8	
	0.4970	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials com Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	ply with EU Directiv	ve 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	13.47	Total (mg)	Chip (Die)	% of Total Weight	2.71
Compliance with the above EU Directives has been verified via i	internal design con	trols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemi Technology Incorporated's knowledge and belief as of the date chemical substance, if any, is not below the threshold of regula	ical substance is N of this document, t tory concern for an	OT an intentional ingredient in the semiconductor device here is no credible reason to believe that the unavoidable by regulatory scheme world-wide.	e and, to the be e impurity con	est of Microch acentration of	hip the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamn http://ul.com/global/eng/pages/offerings/industries/chemicals/p	nability standard fo lastics/	or plastics. You can access the UL iQTM family of databas	ses to obtain a	i test report a	t	2.09	(mg) Total	Wire Bond	% of Total Weight	0.42
The protective "tubes" in which the specific product is shipped box and certain "reels" may be made from PVC plastic.	are made from pol	yvinyl chloride (PVC) plastic. "Window envelopes" used	to hold the pa	cking slip on	the outer		Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in devices in their original packing materials is true and correct to guarantee the completeness and accuracy of data in this form b material suppliers. Supplier information is often protected from raw material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, metals,	this form concerni the best of its kno because it has been disclosure as trad es of the average w and non-metal mat	ng substances restricted by RoHS in Microchip Technolo wledge and belief, as of the date listed in this form. Micro compiled based on the ranges provided in Material Safe e secrets and some information may not have been prov eight of these parts and the average weight of anticipated terials contained within silicon devices (silicon IC) in the	ogy Incorporat ochip Technolo ty Data Sheets ided by subco d significant to finished parts	ed's semicon ogy Incorpora provided by ntract assem oxic metals co	iductor ated cannot raw blers and omponents.			Total	100.00	
Microchip Technology Incorporated does not provide any warra product warranties provided by Microchip Technology Incorpor in Microchip's quotations, sales order acknowledgement, and in	nty, express or imp ated and its subsid nvoices.	blied, with respect to the information provided in this dec liaries are contained in Microchip's standard terms and c	claration. The onditions of s	exclusive, lim ale. These are	iited e provided	5.47	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.1
Microchip disclaims any duty to notify users of updates or chan otherwise, suffered by users or third parties as a result of the us (SGS) or of this Certificate of Compliance for semiconductor pr	iges to Material Cor sers' reliance on th oducts.	ntent Declarations and shall not be liable for any damage e information in Material Content Declarations (MCD) or i	s, direct or ind ndependent th	direct, conseq hird party test	quential or reports		Tin	7440-31-5	100.00	
								Total	100.00	
						497.000				100.000

Basic Substance CAS Number Sub-Cc Silica, vitreous 60676-86-0 Mold C Epoxy Resin (No bromine, No diantimony trioxide) Trade Secret Mold C Phenolic Resin (No B / CL SDO3, No diantimony trioxide) Trade Secret Mold C Carbon Black 1333-864 Mold C Carbon Black 1333-864 Mold C Copper 7440-50-8 Lead Nikver 7440-60-8 Lead Silver 7440-62-13 Lead Silver 7440-62-4 Die Poincitonalized Urethane Resin 94-80-4 Die Functionalized Urethane Resin 172869-86-4 Die Epoxy Resin 9003-36-5 Die Silicon 7440-21-3 Ch Gold 7440-21-3 Pating on external leads (prios) - h Distexin Resin 9023/55	N / A4)	Termir Co	ation Base A oper Alloy (C	Alloy: :u)		Package Hon 8.1 Electronics (nogeneous Materials: e.g. pc boards, display	rs)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance CAS Number Sub-Cc Silica, vitrous 60676-88-0 Mold C Phenolic Resin (No Br / CL Sb03, No diantimomy trioxide) Trade Secret Mold C Phenolic Resin (No Br / CL Sb03, No diantimomy trioxide) Trade Secret Mold C Carbon Black 1333-864. Leax Silver 7440-213 Leax Silver 7440-224. Die Bloot Press 944-80-4 Die Functionalized Urethane Resin 924-86-4 Die Epoxy Resin 9003-36-5 Die Silver 13561-08-5 Die Silven Tin 7440-21-3 Ch Gold 7440-21-5 Pating on external teads (pres) - h Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Cons30 g Total Mass	ained In"	% Total			19.49	(mg) Total	Mold Compound	% of Total Weight	59.06
Silica, vitreous 60676-86-0 Mold C Epoxy Resin (No Brr/CL SbO3. No diantimony trioxide) Trade Secret Mold C Phenolic Resin (No Br / CL SbO3. No diantimony trioxide) Trade Secret Mold C Carbon Black 1333-86-4 Mold C Copper 7440-50-8 Leaa Nickel 7440-02-0 Leaa Silicon 7440-21-3 Leaa Silicon 7440-22-4 Die Diester Resin 94-80-4 Die Epoxy Resin 9003-38-5 Die Epoxy Resin 13561-08-5 Die Silicon 7440-21-3 Leaa Silicon 7440-21-3 Leaa Silicon 7440-21-3 Die Coxy Resin 9003-38-5 Die Coxy Resin 13561-08-5 Die Coxy Resin 7	mponent	Weight	mg/part	ppm	13.43	(ilig) Total	Mola compound	/80t Total Weight	33.00
Epoxy Resin (No bromme, No diantimony trioxide) Irade Secret Mold C Phenolic Resin (No bromme, No diantimony trioxide) Irade Secret Mold C Carbon Black 1333-86-4 Mold C Carbon Black 1333-86-4 Mold C Copper 7440-50-8 Leaa Nickel 7440-22-4 Leaa Siliver 7440-22-4 Leaa Magnesium 7449-22-4 Leaa Siliver 7440-22-4 Die Diester Resin 94-80-4 Die Functionalized Urethane Resin 7280-96-4 Die Epoxy Resin 13561-08-5 Die Epoxy Resin 13561-08-5 Die Silicon 7440-21-3 Ch Gold 7440-21-3 Ch Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directiv	ompound	50.201	16.566	502,010	EME-G600	Silica, vitreous	60676-86-0	85.00	
Prenolic Resin (No Br / LL SDUS, No dianumony thorade) Index Secret Mold C Eboxy, Cresol Nevolac 28690-88-2 Mold C Carbon Black 1333-86-4 Mold C Copper 7440-05-08 Lead Nickel 7440-02-0 Lead Silver 7440-02-0 Lead Silver 7440-22-4 Lead Magnesium 7439-95-4 Lead Magnesium 7439-95-6 Lead Silver 7440-22-4 Die Punctionalized Urethane Resin 72869-86-4 Die Epoxy Resin 13561-08-5 Die Boy Resin 13561-08-5 Die Silver 7440-27-3 Ch Gold 7440-57-5 Wir Tin 7440-57-5 Wir Tin 7440-31-5 Plating on external leads (pins) - h 0.0330 g Total Mass Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations f a chemical substance is absent from the l	Jompound	3.617	1.194	36,174		Epoxy Resin	Trade Secret	6.13	
LDUX, Cless involution 2903/02/2 Mold C Carbon Black 133/86-4 Mold C Copper 7440-50-8 Lear Nickel 7440-02-0 Lear Silver 7440-22-4 Lear Silver 7440-21-3 Lear Magnesium 7439-95-4 Lear Magnesium 7439-95-4 Lear Diester Resin 94-80-4 Die Diester Resin 94-80-4 Die Epoxy Resin 9003-36-5 Die Epoxy Resin 13561-08-5 Die Gold 7440-21-3 Ch Gold 7440-31-5 Plating on external leads (pins) - h Micro Tin 7440-31-5 Plating on external leads (pins) - h Opticative 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason Moldiding compounds	ompound	3.617	1.194	36,174	-	Enory Crocol Novolac	20600-92-2	2.45	
Copper 7440-50-8 Lead Nickel 7440-50-8 Lead Nickel 7440-22-4 Lead Silicon 7440-22-4 Lead Silicon 7440-22-4 Lead Magnesium 7439-95-4 Lead Miller 7440-22-4 Die Diester Resin 94-80-4 Die Functionalized Urethane Resin 72869-86-4 Die Epoxy Resin 903-38-5 Die Gold 7440-21-3 Ch Gold 7440-21-5 Wir Tin 7440-31-5 Plating on external leads (prins) - h 0.0330 g Total Mass Directive 2002/95/EC (RoHS Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Inc	Compound	0.177	0.478	1 772		Carbon Black	1333-86-4	0.30	
Opport 7440-02-0 Lead Silver 7440-02-0 Lead Silver 7440-21-3 Lead Silver 7440-21-3 Lead Magnesium 7439-95-4 Lead Silver 7440-22-4 Die Diester Resin 94-80-4 Die Functionalized Urethane Resin 72869-86-4 Die Epoxy Resin 9003-36-5 Die Epoxy Resin 13561-08-5 Die Gold 7440-57-5 Wir Tin 7440-31-5 Plating on external leads (pins) - N 0.0330 g Total Mass Tin 7440-31-5 Directive 2002/5/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flam ability standard for plastics. You can access http://ul.com/global/eng/pages/offerings/ind	1 Frame	30.020	9 907	300 200		Ourbon Biddit	Total	100.00	
Silver 7440-22-4 Lead Silver 7440-21-3 Lead Magnesium 7439-95-4 Lead Silver 7440-22-4 Die Diester Resin 94-80-4 Die Functionalized Urethane Resin 7289-86-4 Die Epoxy Resin 9003-38-5 Die Silicon 13561-08-5 Die Gold 7440-21-3 Ch Gold 7440-21-5 Wir Tin 7440-21-5 Wir Objective 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations If a chemical substance is absent from the list above, the chemical substance is no credible reason chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://ul.com/gload/eng/pages/offerings/industries/chemicals/pla	1 Frame	0.801	0.264	8.006	10.40	(mg) Total	Lead Frame	% of Total Weight	31 52
Silicon 7440-21-3 Lead Magnesium 7430-95-4 Lead Silver 7440-22-4 Die Diester Resin 94-80-4 Die Functionalized Urethane Resin 72869-86-4 Die Epoxy Resin 9003-36-5 Die Silicon 7440-21-3 Ch Gold 7440-21-3 Ch Silicon 7440-21-3 Ch Gold 7440-21-5 Wir Tin 7440-21-5 Wir Compliance with the above expression 0.0330 g Total Mass Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://ul.com/gloaal/eng/pages/offerings/industries/chemicals/plastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plast box and certain "reels" may be made from PVC	1 Frame	0.526	0.174	5,261	C7025	Copper	7440-50-8	95.24	01.02
Magnesium 7439-95-4 Leact Silver 7440-22-4 Die Diester Resin 94-80-4 Die Functionalized Urethane Resin 72869-86-4 Die Epoxy Resin 9003-36-5 Die Boyx Resin 13561-08-5 Die Gold 7440-21-3 Ch Gold 7440-31-5 Plating on external leads (princ) - h Magnesium 7440-31-5 Vir Tin 7440-31-5 Plating on external leads (princ) - h O.0330 g Total Mass 0.0330 g Total Mass This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Direct) Directive 2002/95/EC (RoHS Direct) Compliance with the above EU Directives has been verified via internal design controls, supplier declarations If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/ </td <td>Frame</td> <td>0.142</td> <td>0.047</td> <td>1,418</td> <td></td> <td>Nickel</td> <td>7440-02-0</td> <td>2.54</td> <td></td>	Frame	0.142	0.047	1,418		Nickel	7440-02-0	2.54	
Silver 7440-22-4 Die Diester Resin 94-80-4 Die Functionalized Urethane Resin 72869-86-4 Die Epoxy Resin 9003-36-5 Die Epoxy Resin 13561-08-5 Die Silicon 7440-21-3 Ch Gold 7440-21-3 Ch Gold 7440-21-3 Ch Gold 7440-21-3 Ch Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). O.0330 g Total Mass This semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (RoHS Direct). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://ul.com/gloage/offerings/industries/chemicals/plastics/ The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plast box and certain "reels" may be made from PVC plastic.	Frame	0.032	0.010	315		Silver	7440-22-4	1.67	
Diester Resin 94-80-4 Die Functionalized Urethane Resin 72869-86-4 Die Epoxy Resin 9003-36-5 Die Epoxy Resin 13561-08-5 Die Silicon 7440-21-3 Ch Gold 7440-21-3 Ch Gold 7440-21-3 Ch Micro Tin 7440-31-5 Plating on external leads (pins) - h Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). 0.0330 g Total Mass Compliance with the above EU Directives has been verified via internal design controls, supplier declarations ff a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason chemical substance, if any, is not below the threshold of regulatory concern or any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://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) plast box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in the	Attach	0.840	0.277	8,400		Silicon	7440-21-3	0.45	
Functionalized Urethane Resin 72869-86-4 Die Epoxy Resin 9003-36-5 Die Epoxy Resin 13561-08-5 Die Silicon 7440-21-3 Ch Gold 7440-21-3 Ch Gold 7440-31-5 Wir Tin 7440-31-5 Plating on external leads (princ) - h O.0330 g Total Mass 0.0330 g Total Mass	Attach	0.168	0.055	1,680		Magnesium	7439-95-4	0.10	
Epoxy Resin 9003-36-5 Die Epoxy Resin 13561-08-5 Die Silicon 7440-21-3 Ch Gold 7440-27-3 Ch Gold 7440-27-5 Wir Tin 7440-27-5 Wir 0.0330 g Total Mass 0.0330 g Total Mass This semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://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) plast box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the guarantee the completeness and accuracy of data in this form because it has been compiled based on the rat material suppliers. Information is provided only as estimates of the average	Attach	0.056	0.018	560			Total	100.00	
Epoxy Resin 13561-08-5 Die Silicon 7440-21-3 Ch Gold 7440-27-3 Wir Tin 7440-31-5 Plating on external leads (pins) - N 0.0330 g Total Mass This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Direct 2002/95/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations if a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://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) plast box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the guarantee the completeness and accuracy of data in this form because it has been compiled based on the rai material suppliers. Information is often protected from disclosure as trade secrets and some inform the take and is of the average weight of these parts and the These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silif Microchip Technology Incorporated does not provid	Attach	0.028	0.009	280	0.37	(mg) Total	Die Attach	% of Total Weight	1.12
Silicon 7440-21-3 Ch Gold 7440-21-3 Wir Tin 7440-57-5 Plating on external leads (pins) - h 0.0330 g Total Mass 0.0330 g Total Mass This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations if a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://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) plast box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the Taw material suppliers. Information is often protected from disclosure as trade secrets and some inform material suppliers. Information is often protected from disclosure as trade secrets and some inform raw material suppliers. Information is provided only as estimates of the average weight of these parts and the These estimates do not include trace levels of dopants, metals, and non-metal materials contained within sili Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the in p	Attach	0.028	0.009	280	2200D	Silver	7440-22-4	75	
Gold 7440-57-5 Wir Tin 7440-31-5 Plating on external leads (pins) - h 0.0330 g Total Mass This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations if a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://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) plast box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the guarantee the completeness and accuracy of data in this form because it has been compiled based on the rat material suppliers. Supplier information is orterided only as estimates of the average weight of these parts and the These estimates do not include trace levels of dopants, metals, and non-metal materials contained within sili Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the in product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Mic in Microchip's quotations, sales order acknowle	ip (Die)	6.300	2.079	63,000		Diester Resin	94-80-4	15	
Tin 7440-31-5 Plating on external leads (pins) - h 0.0330 g Total Mass This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive 2002/95/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason Nolding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://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) plast box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the guarantee the completeness and accuracy of data in this form because it has been compiled based on the rai material suppliers. Information is often protected from disclosure as trade secrets and some inform raw material suppliers. Information is often protected from disclosure as trade secrets and some inform may material suppliers. Information is provided only as estimates of the average weight of these parts and the These estimates do not include trace levels of dopants, metals, and non-metal materials contained within sili Microchip Technology Incorporated does not provide any warranty, express or implied, with	e Bond	0.180	0.059	1,800	Fun	ctionalized Urethane Resin	72869-86-4	5	
<u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Description</u> <u>Descr</u>	Aatte Tin / annealed at 150°C for 1 hour	1.820	0.601	18,200		Epoxy Resin	9003-36-5	3	
0.0330 g Total Mass This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Direct Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://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) plast box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the guarantee the completeness and accuracy of data in this form because it has been compiled based on the rat material suppliers. Supplier information is often protected from disclosure as trade secrets and some inform raw material suppliers. Information is provided only as estimates of the average weight of these parts and the These estimates do not include trace levels of dopants, metals, and non-metal materials contained within sill Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the in product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Mic in Microchip's quotations, sales order acknowledgement, and invoices.	TOTALS:	100.000	33.000	1,000,000		Epoxy Resin	13561-08-5	3	
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Direct Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified via internal design controls, supplier declarations if a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredier Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://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) plast box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the guarantee the completeness and accuracy of data in this form because it has been compiled based on the rai material suppliers. Information is provided only as estimates of the average weight of these parts and the These estimates do not include trace levels of dopants, metals, and non-metal materials contained within sili Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the in product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Mic in Microchip's quotations, sales order acknowledgement, and invoices.							Total	100.00	
Chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access http://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) plast box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the guarantee the completeness and accuracy of data in this form because it has been compiled based on the rai material suppliers. Supplier information is provided only as estimates of the average weight of these parts and the These estimates do not include trace levels of dopants, metals, and non-metal materials contained within sili Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the in product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Mic in Microchip's quotations, sales order acknowledgement, and invoices.	, and /or analytical test data. It in the semiconductor devic	ce and, to the be	est of Microch	nip the	2.00	Doped Silcon	7440-21-3 Total	100 100.00	0.5
box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the guarantee the completeness and accuracy of data in this form because it has been compiled based on the rai material suppliers. Supplier information is often protected from disclosure as trade secrets and some inform raw material suppliers. Information is provided only as estimates of the average weight of these parts and the These estimates do not include trace levels of dopants, metals, and non-metal materials contained within sill Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the in product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Mic in Microchip's quotations, sales order acknowledgement, and invoices.	I-wide. the UL iQTM family of databa	ases to obtain a	test report a	t the outer	0.06	(mg) Total	Wire Bond	% of Total Weight	0.18
Microchip Technology Incorporated believes the information in this form concerning substances restricted b devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the guarantee the completeness and accuracy of data in this form because it has been compiled based on the rai material suppliers. Supplier information is often protected from disclosure as trade secrets and some inform raw material suppliers. Information is provided only as estimates of the average weight of these parts and the These estimates do not include trace levels of dopants, metals, and non-metal materials contained within sill Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the in product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's quotations, sales order acknowledgement, and invoices.						Doped Gold	7440-57-5	100	
Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the in product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Micr in Microchip's quotations, sales order acknowledgement, and invoices.	y RoHS in Microchip Technol date listed in this form. Micr nges provided in Material Saf ation may not have been pro average weight of anticipatr con devices (silicon IC) in th	logy Incorporat rochip Technolo ety Data Sheets vided by subco ed significant to e finished parts	ed's semicor ogy Incorpora provided by ntract assem xic metals co	nductor ated cannot raw blers and omponents.		<u> </u>	Total	100.00	
Minneshin diselations and data to petition and for data and have a share and the Material Constant Declarations and shall	formation provided in this de rochip's standard terms and	eclaration. The conditions of s	exclusive, lim ale. These ar	nited e provided	0.60	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.82
Microcnip disclaims any duty to notify users of updates or changes to Material Content Declarations and shal otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material C (SGS) or of this Certificate of Compliance for semiconductor products.	I not be liable for any damag ontent Declarations (MCD) or	jes, direct or ind independent th	irect, consec ird party test	quential or t reports		Tin	7440-31-5 Total	100.00	
					L		i Otal	100.00	

	Semiconductor Device Type: ST 14 (Lead) TSSOP 4.4mm (D4 / DH)			ation Base A oper Alloy (C	Alloy: u)		Package Hom 8.1 Electronics (e	ogeneous Materials: e.g. pc boards, displa	ys)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Devic	e Type: ST 14 (Lead)	TSSOP 4.4mm (D4 / DH)								e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	EME-G700	Silica vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4 075	2 445	40 751		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	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	100.00	1
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	C7025+Ag	Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.204	0.123	2.043	0.020g	Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.045	0.027	454		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	1 214	0.021	12 136		Silicon	7440-21-3	0.45	
Enoxy resin	Trade Secret	Die Attach	0.328	0.120	3 280		Magnesium	7439-95-4	0.40	
Metal oxide	Trade Secret	Die Attach	0.020	0.030	402		Magnesiam	Total	100.00	1
Gamma-butyrolactope	96-48-0	Die Attach	0.049	0.030	432	0.08	(mg) Total	Die Attech	% of Total Weight	1.64
Cilicon	7440.04.0	Chip (Dip)	0.043	0.000	432	0.90	(ing) rotai	Die Attach		1.04
Silicon	7440-21-3	Chip (Die)	3.340	2.004	33,400	8290	Silver	7440-22-4	74	
Guu	7440-57-5		0.490	0.294	4,900		Epoxy resin	Trade Secret	20	
1111	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.200	1.300	22,000			Trade Secret	3	
		TUTALS:	100.000	60.000	1,000,000		Gamma-butyrolactone	96-48-0	3	ļ
	0.0600	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materia Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directiv	ils comply with EU Directive e).	e 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recast	Directive) and	d with EU	2.00	Total (mg)	Chip (Die)	% of Total Weight	3.34
Compliance with the above EU Directives has been verif	ied via internal design cont	rols, supplier declarations, and /or analytical test data.					Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the	e chemical substance is NC							Total	100.00	•
recnnology incorporated's knowledge and belief as of t chemical substance, if any, is not below the threshold o Molding compounds used by Microchip meet the UL94 V	he date of this document, th f regulatory concern for any '0 flammability standard for	Of an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa	e and, to the be le impurity cor ses to obtain a	est of Microch centration of test report a	the	0.29	(ma) Total	Total Wire Bond	100.00	0.49
recnnology incorporated's knowledge and belief as of t chemical substance, if any, is not below the threshold o Molding compounds used by Microchip meet the UL94 \ http://ul.com/global/eng/pages/offerings/industries/chem The protective "tubes" in which the specific product is s box and certain "reels" may be made from PVC plastic.	he date of this document, ti f regulatory concern for any /0 flammability standard for nicals/plastics/ hipped are made from poly	Of an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa rvinyl chloride (PVC) plastic. "Window envelopes" used	e and, to the be le impurity cor ses to obtain a to hold the pa	est of Microch centration of test report a cking slip on	hip the t the outer	0.29	(mg) Total	Total Wire Bond 7440-57-5	100.00 % of Total Weight 100	0.49
Technology incorporated's knowledge and belief as of t chemical substance, if any, is not below the threshold o Molding compounds used by Microchip meet the UL94 N http://ul.com/global/eng/pages/offerings/industries/cher The protective "tubes" in which the specific product is s box and certain "reels" may be made from PVC plastic.	he date of this document, ti f regulatory concern for any /0 flammability standard for nicals/plastics/ .hipped are made from poly	Drain intentional ingredient in the semiconductor devic incre is no credible reason to believe that the unavoidab y regulatory scheme world-wide. In plastics. You can access the UL iQTM family of databa rvinyl chloride (PVC) plastic. "Window envelopes" used In substances restricted by PoKS in Microchia Technology	e and, to the be le impurity cor ses to obtain a to hold the pa	est of Microch Icentration of I test report a Icking slip on	hip the t the outer	0.29	(mg) Total Doped Gold	Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight 100 100.00	0.49
Technology incorporated's knowledge and belief as of t chemical substance, if any, is not below the threshold o Molding compounds used by Microchip meet the UL94 \ http://ul.com/global/eng/pages/offerings/industries/cher The protective "tubes" in which the specific product is s box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the informat devices in their original packing materials is true and co guarantee the completeness and accuracy of data in this material suppliers. Information is provided only as These estimates do not include trace levels of dopants,	he date of this document, ti f regulatory concern for any /0 flammability standard for nicals/plastics/ whipped are made from poly ation in this form concernin rrect to the best of its know i form because it has been af from disclosure as trade stimates of the average we metals, and non-metal mate	of an intentional ingredient in the semiconductor devic incre is no credible reason to believe that the unavoidab y regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa winyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technol yledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been provight of have bears provided in an enveloped grilds contained within silicon devices (silicon IC) in the	e and, to the b le impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets vided by subco d significant to finished parts	est of Microch centration of test report a cking slip on ed's semicon ogy Incorpora provided by ntract assem xic metals cc	hip the t t the outer adductor ated cannot raw blers and mponents.	0.29	(mg) Total	Total Wire Bond 7440-57-5 Total	100.00 % of Total Weight 100 100.00	0.49
Inconology incorporated's knowledge and belief as of t chemical substance, if any, is not below the threshold o Molding compounds used by Microchip meet the UL94 \ http://ul.com/global/eng/pages/offerings/industries/cher The protective "tubes" in which the specific product is s box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the inform devices in their original packing materials is true and co guarantee the completeness and accuracy of data in this material suppliers. Supplier information is often protect raw material suppliers. Information is provided only as of These estimates do not include trace levels of dopants, Microchip Technology Incorporated does not provide an product warranties provided by Microchip Technology In	he date of this document, ti f regulatory concern for any 0 flammability standard for nicals/plastics/ shipped are made from poly attion in this form concerning rrect to the best of its know i form because it has been i ad from disclosure as trade istimates of the average we metals, and non-metal mate y warranty, express or imp corporated and its subsidi t, and invoices.	Of an intentional ingredient in the semiconductor devic tere is no credible reason to believe that the unavoidab r regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databa winyl chloride (PVC) plastic. "Window envelopes" used the substances restricted by RoHS in Microchip Technol /ledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe is secrets and some information may not have been pro- ight of these parts and the average weight of anticipate rials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this de aries are contained in Microchip's standard terms and o	e and, to the b le impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets vided by subco d significant to d significant to claration. The conditions of s	est of Microch icentration of itest report a cking slip on ed's semicon ogg Incorpora provided by ntract assem xic metals co exclusive, lim ale. These are	hip the t t ture outer ductor ated cannot raw blers and omponents. ited e provided	0.29	(mg) Total	Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour	100.00 % of Total Weight 100 100.00 % of Total Weight	0.49
I ecnnology incorporated's knowledge and belief as of t chemical substance, if any, is not below the threshold o Molding compounds used by Microchip meet the UL94 ¹ http://ul.com/global/eng/pages/offerings/industries/cher The protective "tubes" in which the specific product is a box and certain "reels" may be made from PVC plastic. Microchip Technology Incorporated believes the informat devices in their original packing materials is true and cc guarantee the completeness and accuracy of data in this material suppliers. Supplier information is often protect raw material suppliers. Information is provided only as a These estimates do not include trace levels of dopants, Microchip Technology Incorporated does not provide an product warranties provided by Microchip Technology In in Microchip's quotations, sales order acknowledgemen Microchip disclaims any duty to notify users of updates otherwise, suffered by users or third parties as a result (SGS) or of this Certificate of Compliance for semicondu	he date of this document, ti f regulatory concern for any /0 flammability standard foinicals/plastics/ whipped are made from poly ation in this form concerning risect to the best of its know of form because it has been stimates of the average we metals, and non-metal mater y warranty, express or imp toorporated and its subsidit t, and invoices. or changes to Material Comi of the users' reliance on the ictor products.	If an intentional ingredient in the semiconductor device prere is no credible reason to believe that the unavoidab y regulatory scheme world-wide. Ir plastics. You can access the UL iQTM family of databa nvinyl chloride (PVC) plastic. "Window envelopes" used g substances restricted by RoHS in Microchip Technol yledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe secrets and some information may not have been pro- ight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this de aries are contained in Microchip's standard terms and of tent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or	e and, to the b le impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets rided by subco d significant to finished parts cclaration. The conditions of s	est of Microch centration of test report a cking slip on ed's semicon gy Incorpore provided by nract assem xic metals co exclusive, lim ale. These are lirect, conseq ird party test	hip the t t the outer ductor ated cannot raw bilers and omponents. iited e provided quential or reports	0.29	(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 bour 7440-31-5	100.00 % of Total Weight 100 100.00 % of Total Weight	0.49
Incorporated's knowledge and belief as of t chemical substance, if any, is not below the threshold o Molding compounds used by Microchip meet the UL94 1 http://ul.com/global/eng/pages/offerings/industries/cher The protective "tubes" in which the specific product is s box and certain "reels" may be made from PVC plastic. Wicrochip Technology Incorporated believes the inform levices in their original packing materials is true and cc guarantee the completeness and accuracy of data in this naterial suppliers. Supplier information is often protect wa material suppliers. Information is provided only as These estimates do not include trace levels of dopants, Wicrochip Technology Incorporated does not provide an sroduct warranties provided by Microchip Technology in n Microchip's quotations, sales order acknowledgemen Wicrochip disclaims any duty to notify users of updates stherwise, suffered by users or third parties as a result of SGS) or of this Certificate of Compliance for semicondu	he date of this document, ti f regulatory concern for any /0 flammability standard fonicals/plastics/ whipped are made from poly ation in this form concernin rrect to the best of its know is form because it has been df from disclosure as trade stimates of the average we metals, and non-metal mate wy warranty, express or imp noorporated and its subsidi t, and invoices. or changes to Material Com if the users' reliance on the ictor products.	of an intentional ingredient in the semiconductor devic incre is no credible reason to believe that the unavoidably regulatory scheme world-wide. r plastics. You can access the UL iQTM family of databany rvinyl chloride (PVC) plastic. "Window envelopes" used and substances restricted by RoHS in Microchip Technol Vedge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe secrets and some information may not have been pro- gight of these parts and the average weight of anticipate erials contained within silicon devices (silicon IC) in the lied, with respect to the information provided in this de arises are contained in Microchip's standard terms and of tent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or	e and, to the b le impurity cor ses to obtain a to hold the pa ogy Incorporat ochip Technol ty Data Sheets vided by subcc disignificant to finished parts claration. The conditions of s as, direct or int independent th	est of Microch centration of test report a cking slip on ed's semicon pgy Incorpora provided by ntract assem xic metals co - exclusive, lim ale. These are lirect, conseq ird party test	hip the t t t t t t t t t t t t t t t t t t	0.29	(mg) Total Doped Gold (mg) Total Tin	Vire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 bour 7440-31-5 Total	100.00 % of Total Weight 100 100.00 % of Total Weight 100.00	2.28

Semiconductor Devic	Semiconductor Device Type: ST 16 (Lead) TSSOP 4.4mm (D8) Basic Substance CAS Number "Contained In" Sub-Component		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
	CAS Number	"Contained In"	% Total			22.50	(mg) Total	Mold Compound	% ot Total Weight	34.62
Silice uttreaus (or fused)	CAS Number	Sub-Component		mg/part	ppm	EME 0700	Cilico vitroque (or fuend)	60676.96.0	- 9E 00	-
Enoxy Resin	Trade Secret	Mold Compound	29.427	19.120	294,270	EME-G700	Enow Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.077	1.350	20,772	-	Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.104	0.068	1 039	1	Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44 468	28 904	444 680	1	Odibon Biddit	Total	100.00	
Nickel	7440-30-8	Lead Frame	1 186	0.771	11 859	20.25	(ma) Total	Load Eramo	% of Total Weight	46.60
Silvor	7440-02-0	Lead Frame	0.770	0.507	7 702	30.35 C7025 \ A a	(ilig) Total		% OF 24	40.09
Silicon	7440-22-4	Lead Frame	0.779	0.307	2 101	C/025+Ag	Niekel	7440-50-8	95.24	
Magnesium	7440-21-3	Lead Frame	0.210	0.137	2,101	-	Silver	7440-02-0	2.34	
Silver	7439-95-4	Die Attach	2 472	1.607	24 716	-	Silicon	7440-22-4	0.45	
Enoxy resin	Trade Secret	Die Attach	0.668	0.434	6 680	-	Magnosium	7440-21-3	0.45	
Metal oxide	Trade Secret	Die Attach	0.000	0.454	1,002	-	Wagnesium	Total	100.00	l
Gamma buturalastana	06.48.0	Die Attach	0.100	0.005	1,002	0.47	(Die Attent	No.00	0.04
Gamma-butyrolacione	96-46-0	Die Allach	0.100	0.065	1,002	2.17	(mg) I otal	Die Attach	% of I otal Weight	3.34
Silicoh	7440-21-3	Chip (Die)	12.340	8.021	123,400	8290	Silver	7440-22-4	/4	
Gold	7440-57-5	wire Bond	0.610	0.397	6,100	-	Epoxy resin	Trade Secret	20	
IIh	7440-31-5	Plating on external leads (pins) - Matte I in / annealed at 150°C for 1 hour	2.400	1.560	24,000	-	Metal Oxide	I rade Secret	3	
		TUTALS:	100.000	65.000	1,000,000		Gamma-butyrolactone	96-48-0	3	
								p (=)		
Compliance with the above EU Directives has been verif f a chemical substance is absent from the list above, the echnology Incorporated's knowledge and belief as of th	ied via internal design con e chemical substance is N he date of this document, t	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab	e and, to the b le impurity cor	est of Microcl	hip f the		Doped Silicon	7440-21-3 Total	100 100.00	
Compliance with the above EU Directives has been verif f a chemical substance is absent from the list above, the rechnology Incorporated's knowledge and belief as of th shemical substance, if any, is not below the threshold of <i>A</i> olding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chem 'he protective "tubes" in which the specific product is s	ied via internal design con e chemical substance is Ni he date of this document, t f regulatory concern for an /0 flammability standard fo nicals/plastics/ shipped are made from pol	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. Ir plastics. You can access the UL iQTM family of databa yvinyl chloride (PVC) plastic. "Window envelopes" used	e and, to the b le impurity cor uses to obtain a to hold the pa	est of Microci ncentration of a test report a acking slip on	hip f the It	0.40	Doped Silicon (mg) Total	7440-21-3 Total Wire Bond	100 100.00 % of Total Weight	0.61
Compliance with the above EU Directives has been verif f a chemical substance is absent from the list above, the Fechnology Incorporated's knowledge and belief as of th shemical substance, if any, is not below the threshold of Wolding compounds used by Microchip meet the UL94 V ttp://ul.com/global/eng/pages/offerings/industries/chem The protective "tubes" in which the specific product is s nox and certain "reels" may be made from PVC plastic.	ied via internal design con e chemical substance is N he date of this document, t f regulatory concern for ar /0 flammability standard fo nicals/plastics/ shipped are made from pol	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databa yvinyl chloride (PVC) plastic. "Window envelopes" used	e and, to the b le impurity cor uses to obtain a to hold the pa	est of Microco ncentration of a test report a ncking slip on	hip f the it the outer	0.40	Doped Silicon (mg) Total Doped Gold	7440-21-3 Total Wire Bond 7440-57-5	100 100.00 % of Total Weight 100	0.61
Compliance with the above EU Directives has been verif f a chemical substance is absent from the list above, the Fechnology Incorporated's knowledge and belief as of the shemical substance, if any, is not below the threshold of Wolding compounds used by Microchip meet the UL94 V ttp://ul.com/global/eng/pages/offerings/industries/chen The protective "tubes" in which the specific product is so the protective "tubes" in which the specific product is so and certain "reels" may be made from PVC plastic. Vicrochip Technology Incorporated believes the informate levices in their original packing materials is true and co juarantee the completeness and accuracy of data in this naterial suppliers. Information is provided only as e These estimates do not include trace levels of dopants, not Alicrochip Technology Incorporated believes not provide an	ied via internal design con e chemical substance is N he date of this document, t f regulatory concern for an /0 flammability standard fon nicals/plastics/ shipped are made from pol ation in this form concerni prect to the best of its kno s form because it has been ed from disclosure as trad estimates of the average w metals, and non-metal man by warranty, express or imp	trols, supplier declarations, and /or analytical test data. DT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databa yvinyl chloride (PVC) plastic. "Window envelopes" used ng substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Saf e secrets and some information may not have been pro- eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the obled, with respect to the information provided in this de	e and, to the b le impurity cor ases to obtain a to hold the pa ogy Incorporat ochip Technol ety Data Sheets vided by subcc d significant to e finished parts claration. The	est of Microci ncentration of a test report a acking slip on ted's semicor ogy Incorpor s provided by provided by nutract assem oxic metals co s. exclusive, lim	hip f the tt the outer nductor ated cannot raw bilers and omponents.	0.40	(mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total	100 100.00 % of Total Weight 100 100.00	0.61
Compliance with the above EU Directives has been verif if a chemical substance is absent from the list above, th Fechnology Incorporated's knowledge and belief as of th chemical substance, if any, is not below the threshold of Wolding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chem The protective "tubes" in which the specific product is s box and certain "reels" may be made from PVC plastic. Wicrochip Technology Incorporated believes the informat fevices in their original packing materials is true and co juarantee the completeness and accuracy of data in this naterial suppliers. Supplier information is often protects aw material suppliers. Information is provided only as e "hese estimates do not include trace levels of dopants, i Microchip Technology Incorporated does not provide an viroduct warranties provided by Microchip Technology In n Microchip's quotations, sales order acknowledgement ficrochip disclaims any duty to notify users of updates of	ied via internal design con e chemical substance is N he date of this document, t f regulatory concern for an /0 flammability standard for nicals/plastics/ shipped are made from pol ation in this form concerni yrrect to the best of its kno form because it has been ed from disclosure as trad setimates of the average w metals, and non-metal mai ny warranty, express or imp nocorporated and its subsid t, and invoices.	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. Ir plastics. You can access the UL iQTM family of databa yvinyl chloride (PVC) plastic. "Window envelopes" used ing substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been pro- eight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the oblied, with respect to the information provided in this de liaries are contained in Microchip's standard terms and ob-	e and, to the b le impurity cor ases to obtain a to hold the pa ogy Incorporat ogy Incorporat ogy Incorporat ogy Incorporat disgnificant to finished parts claration. The conditions of s as, direct or in-	est of Microci ncentration of a test report a acking slip on ted's semicor ogy Incorpor- ogy Incorpor- s provided by ontract assem oxic metals cr s. exclusive, lin iaale. These ar direct, conser	hip f the tt the outer nductor ated cannot raw blers and omponents. nited e provided quential or	0.40	(mg) Total (mg) Total	7440-21-3 Total Wire Bond 7440-57-5 Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1	100 100.00 % of Total Weight 100 100.00	0.61
Compliance with the above EU Directives has been verif if a chemical substance is absent from the list above, the Technology Incorporated's knowledge and belief as of the chemical substance, if any, is not below the threshold of Wolding compounds used by Microchip meet the UL94 V http://ul.com/global/eng/pages/offerings/industries/chem The protective "tubes" in which the specific product is s box and certain "reels" may be made from PVC plastic. Wicrochip Technology Incorporated believes the informat levices in their original packing materials is true and co juarantee the completeness and accuracy of data in this naterial suppliers. Supplier information is often protect "hese estimates do not include trace levels of dopants, i Alicrochip Technology Incorporated does not provide an iroduct warranties provided by Microchip Technology In n Microchip's quotations, sales order acknowledgement Alicrochip disclaims any duty to notify users of updates of therwise, suffered by users or third parties as a result of SGS) or of this Certificate of Compliance for semicondu	ied via internal design con e chemical substance is N he date of this document, t f regulatory concern for an /0 flammability standard for nicals/plastics/ shipped are made from pol ation in this form concerni rrrect to the best of its kno form because it has been ed from disclosure as trad estimates of the average w metals, and non-metal mai ny warranty, express or imp neoroporated and its subsid t, and invoices. or changes to Material Cor of the users' reliance on th uctor products.	trols, supplier declarations, and /or analytical test data. OT an intentional ingredient in the semiconductor devic here is no credible reason to believe that the unavoidab y regulatory scheme world-wide. or plastics. You can access the UL iQTM family of databa yvinyl chloride (PVC) plastic. "Window envelopes" used ing substances restricted by RoHS in Microchip Technol wledge and belief, as of the date listed in this form. Micr compiled based on the ranges provided in Material Safe e secrets and some information may not have been pro- ight of these parts and the average weight of anticipate terials contained within silicon devices (silicon IC) in the blied, with respect to the information provided in this de iaries are contained in Microchip's standard terms and on tent Declarations and shall not be liable for any damagne e information in Material Content Declarations (MCD) or	e and, to the b le impurity cor uses to obtain a to hold the pa ochip Technol ety Data Sheets vided by subcc da significant to disgnificant to claration. The conditions of s es, direct or int independent th	est of Microcl ncentration of a test report a acking slip on ted's semicor ogy Incorpor- s provided by ontract assem poxic metals co s. exclusive, lim tale. These ar direct, consec hird party test	hip f the at the outer nductor ated cannot raw blers and omponents. nited e provided quential or t reports	0.40	(mg) Total (mg) Total (mg) Total Tin	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 100.00	2.4

Semiconductor Device Type: ST No. and TSCP 4-semicity of the semicond	Semiconductor Device Type: ST 20 (ase) TSDP 4.mm (22 / 62) Basic Substance CAS Number Sub-Component Weight mppart ppm. 27.22 (mg) Todi Mail Silicu, uttress of folds) 10007 666 Midd Component 40.655 14.63 40.65 Med Component 40.655 Med	eneous Materials: pc boards, displays)	JEDEC 97 Product Marking and/or Pkg. Labeling					
Bate Bate and the Case Name Contrained in the Sub-Compand in the Sub	Basic Substance Contained In* ** Total mgpart pp 97.22 (mg) total Mu Silve_timus for lund) (10)7/6.8-0 Mode Commond 4.05.02 31.03 41.06.00 Mice Silve_timus for lund) 1.00 Mice Silve_timus for lund) Mice Silve_timus for lund) 1.00 <td< th=""><th></th><th>e3</th></td<>		e3					
Site Use of the set of the	Billex State State <t< th=""><th>Mold Compound %ot Total W</th><th>ight 47.72</th></t<>	Mold Compound %ot Total W	ight 47.72					
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Product Ratin Table Scoret Model Compound 2/33	Phenoic Resin Trade Secret Mold Compound 2.283 28.023 Phenoic Resin Catoo Block 7240 50.8 Laad Finne 40.725 31.76 40/251 4.43 Copper 7240 50.8 Laad Finne 40.725 31.76 40/251 Sileon 7440 524 Lead Finne 0.714 0.557 7.137 67.025 + Ag Magnesian 7243 554 Laad Finne 0.132 1.50 1.924 Magnesian 7243 554 Laad Finne 0.043 0.033 4.02 Magnesian 7243 554 Laad Finne 0.63 0.043 5.44 Magnesian 7243 554 Laad Finne 0.63 0.043 5.44 Good 740 527 Program channes to the top of	Trade Secret 8.70	_					
Cation Black 1338 864 Mold Compound 0.142 0.117 1.420 Canon Black 0.323 0.33 Nickel 7440 50.4 Lase Frame 0.123 81.37 (mg Taul Lase Frame 0.026 Shar 7440 52.4 Lase Frame 0.112 0.057 7.133 (mg Taul Lase Frame 6.24 Shar 7440 52.4 Lase Frame 0.112 0.557 1.024 1.024 0.057 7.133 (mg Taul 1.426 50.4 0.62.4 Billion 7440 52.6 Lase Frame 0.052 0.550 1.024 1.024 0.045 0.42 0.44	Carbon Block 1333-88-4 Mode Compound 0.112 1.4.22 Cease Block Nickel 7440-02-0 Laad Frame 0.725 31.76 407.251 33.35 forg Total Silver 7440-02-0 Laad Frame 0.192 0.195 1.824 53.35 forg Total Silver 7440-22-4 Lead Frame 0.192 0.192 1.924 Notesi Silver 7440-22-4 De Attech 0.331 428 Notesi Notesi <td>Trade Secret 6.00</td> <td></td>	Trade Secret 6.00						
Copper 7440 50.5 Lad Frame 47.25 31.760 47.25 1.767 407.251 Lad Frame 47.252 1.766 407.251 Lad Frame 47.252 Lad Frame 47.256 1.778 Lad Frame 47.256 1.778 Lad Frame 47.256 1.778 1.786 407.251 1.786 42.766 42.7	Copper 7440-50-8 Lead Frame 40.725 31.766 407.251 Noted 7440-52-4 Lead Frame 0.714 0.557 7.137 67625-64 Shor 7440-22-4 Lead Frame 0.130 0.1324 0.130 1.524 Magnetism 7439-85-4 Lead Frame 0.043 0.033 426 Shor Noted Shor	1333-86-4 0.30						
Nicki 740 02.0 Lad Fame 0.06 0.877 7.057	Noted 7440-02-0 Lead Frame 1.086 0.847 10.861 33.50 (mg) Teal Share 7440-22.4 Laad Frame 0.714 0.557 7,137 (7732+ A) Copper Noted	Total 10	0.00					
$\frac{1}{1000} \frac{1}{1000} \frac{1}{1000$	Silver 7440-224 Laad Frame 0.714 0.557 7.137 Miles 7440-224 Lob Altach 0.132 0.150 1.024 Mole 7440-224 Lob Altach 0.328 0.150 1.024 Epsy resin Trade Secret De Attach 0.358 0.278 3.560 Gamma-butycolactore 66480 De Attach 0.053 0.042 534 1.32 Com Total Gamma-butycolactore 66480 De Attach 0.053 0.042 534 1.32 Com Total Biocon 7440-21-3 Chru (De ba 4.560 4.520 5.400 920 Silver <	Lead Frame % of Total W	ight 42.76					
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ticrochip 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 and trans sheen completeness and accuracy of data in this form because it has been complied based on the ranges provided by subcontract assemblers information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals somponents. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts. iicrochip 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 ovided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are ovided at 100.00 to indegendent third party test or third parties as a result of the users' reliance on the information in Material Content Declarations. (MCD) or independent third party test ports (SGS) or of this Certificate of Compliance for semiconductor products.	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 by assemblers and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by subcontract assemblers and raw material suppliers. 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 are rowed in Microchip's quotations, sales order acknowledgement, and invoices. Wicrochip disclaims any duty to notify users of updates or changes to Material Content Declarations in Material Content Declarations (MCD) or independent third party test trip arties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test trip arties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test trip arties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test trip arties as a result	7440-57-5 100						
icrochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited roduct warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are rovided in Microchip's quotations, sales order acknowledgement, and invoices.	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. 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 'eports (SGS) or of this Certificate of Compliance for semiconductor products.	i otal 11	0.00					
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 r 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 ports (SGS) or of this Certificate of Compliance for semiconductor products.	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 (SGS) or of this Certificate of Compliance for semiconductor products.	ting on external ds (pins) - Matte Tin / ealed at 150°C for 1 r	ight 2.51					
		7440-31-5 100.00						
		Total 10	0.00					

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Місвоснір			Termination Base Alloy: Copper Alloy (Cu)				Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			
Semiconductor Device Typ	e: QU8E 08 (Lead) U	SON/UDFN 2x2x0.55mm (QN)								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	EME G770HT	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	C7025 + Ag	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	8352L	Silver	7440-22-4	80.00	
		TOTALS:	100.000	12.500	1,000,000		Epoxy Resin	Trade secret	20.00	
	0.0125 a Tot	al Mass						Total	100.00	
This semiconductor device and its homogenous materials compl	y with EU Directive 2002/95/	EC (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast Di	rective) and	with EU	0.14	(mg) Total	Chip (Die)	% of Total Weight	1.09
Compliance with the above EU Directives has been verified via intervention.	ternal design controls, supp	lier declarations, and /or analytical test data.				Doped GaAs	Gallium arsenide	1303-00-0	100	
If a chemical substance is absent from the list above, the chemic: Technology Incorporated's knowledge and belief as of the date of chemical substance, if any, is not below the threshold of regulator	al substance is NOT an inter f this document, there is no ory concern for any regulato	ntional ingredient in the semiconductor device an credible reason to believe that the unavoidable in ry scheme world-wide.	d, to the best purity conce	of Microchip Intration of th	ne			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flamma http://ul.com/global/eng/pages/offerings/industries/chemicals/pla	ability standard for plastics. stics/	You can access the UL iQTM family of databases	to obtain a te	est report at		0.04	(mg) Total	Wire Bond	% of Total Weight	0.31
The protective "tubes" in which the specific product is shipped a box and certain "reels" may be made from PVC plastic.	re made from polyvinyl chlo	oride (PVC) plastic. "Window envelopes" used to h	old the pack	ing slip on th	e outer		Doped Gold	7440-57-5	100.00	
Microchip Technology Incorporated believes the information in th devices in their original packing materials is true and correct to th guarantee the completeness and accuracy of data in this form be suppliers. Supplier information is often protected from disclosur- material suppliers. Information is provided only as estimates of the These estimates do not include trace levels of dopants, metals, and	Alicrochip 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 juarantee 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 naterial 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.							Total	100.00	y
Microchip Technology Incorporated does not provide any warran warranties provided by Microchip Technology Incorporated and i Microchip's quotations, sales order acknowledgement, and invoid	licrochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited produ rarranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in licrochip's quotations, sales order acknowledgement, and invoices.					0.11	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.89
Microchip disclaims any duty to notify users of updates or chang otherwise, suffered by users or third parties as a result of the use (SGS) or of this Certificate of Compliance for semiconductor proc	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 (S) or of this Certificate of Compliance for semiconductor products.						Tin	7440-31-5	100.00	
								Total	100.00	-
					I	12.500)			100.000

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Selection basis Control Virtual Control Virtual Part of the selection Control Contro Co				Termir Co	nation Base / pper Alloy (C	Alloy: Cu)		Package Hom 8.1 Electronics (nogeneous Materials: e.g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance Contrained in the contract of the substance Contract of the substance Note Composed Yes (rad) Yes (rad) <t< th=""><th>Semiconductor Device</th><th>e Type: QUAE 08(</th><th></th><th>o(T) </th><th>1</th><th>1</th><th></th><th></th><th></th><th></th><th>65</th></t<>	Semiconductor Device	e Type: QUAE 08(o(T)	1	1					65
basic plastication Lob Number advance Product Product </th <th>Dania Orthoforna</th> <th>OAO North an</th> <th>"Contained In"</th> <th>% Total Weight</th> <th></th> <th></th> <th>9.40</th> <th>(mg) Total</th> <th>Mold Compound</th> <th>% ot Total Weight</th> <th>75.18</th>	Dania Orthoforna	OAO North an	"Contained In"	% Total Weight			9.40	(mg) Total	Mold Compound	% ot Total Weight	75.18
Bits Bits <th< td=""><td>Basic Substance</td><td>CAS Number</td><td>Sub-Component</td><td>weight</td><td>mg/part</td><td>ppm</td><td>ENE OFFICIE</td><td>015-01</td><td></td><td>-</td><td></td></th<>	Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm	ENE OFFICIE	015-01		-	
Link Link <thlink< th=""> Link Link <thl< td=""><td>Silica, fused</td><td>60676-86-0</td><td>Mold Compound</td><td>67.662</td><td>8.458</td><td>676,620</td><td>EME G//UHI</td><td>Silica, fused</td><td>60676-86-0</td><td>90.00</td><td></td></thl<></thlink<>	Silica, fused	60676-86-0	Mold Compound	67.662	8.458	676,620	EME G//UHI	Silica, fused	60676-86-0	90.00	
Charles Product basis Product state Note 100 200 2000 2000 2000 100	Epoxy Resin	Trade Secret	Mold Compound	3.646	0.456	36,462		Epoxy Resin	Trade Secret	4.85	
Operation Product	Carbon Block	1222 96 4	Mold Compound	3.646	0.456	30,462	-	Phenolic Resin	1 rade Secret	4.85	
Note 1440.02 Load Finite 0.02 5.000 5.600 5.600 2.60 model Lead Finite 0.022 0.000 7.402.91 Lead Finite 0.022 0.002 2.60 model CPU2 + Ap Composition Ked Call Model 2.63 Mageesiam 7.443.964.4 Lead Finite 0.022 0.003 2.15 State 7.405.924 2.64 State 7.405.924 0.010 5.000 7.405.924 0.010 5.000 1000 0.010 5.000 State 7.405.924 0.010 1000 0.010 5.000 1000 0.010 5.000 1000 0.010 1000 0.010 10000	Calibori Black	7440 50 8	Niola Compound	0.220	0.028	2,200	-	Carbon Black	1333-80-4	0.30	
Stein 1740-013 Liked Frame 0.007 0.002 0.002 0.002 0.002 100	Copper	7440-50-8	Lead Frame	20.505	2.503	205,054	0.00	() T	Iotai	100.00	04 50
Listen Total Value (a) Listen finite Listen finit Listen finit <thlisten finite<="" t<="" td=""><td>Nickei</td><td>7440-02-0</td><td>Lead Frame</td><td>0.547</td><td>0.066</td><td>5,469</td><td>2.69</td><td>(mg) I otal</td><td>Lead Frame</td><td>% of Total Weight</td><td>21.53</td></thlisten>	Nickei	7440-02-0	Lead Frame	0.547	0.066	5,469	2.69	(mg) I otal	Lead Frame	% of Total Weight	21.53
Bind 1442 52-4 Loss frame 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.046 0.045 0.046 0.046 0.046 0.046 0.046 0.046 0.045	Silicon	7440-21-3	Lead Frame	0.097	0.012	969	C7025 + Ag	Copper	7440-50-8	95.24	
Step 140 vote 120 vote <th< td=""><td>Magnesium</td><td>7439-95-4</td><td>Lead Frame</td><td>0.022</td><td>0.003</td><td>215</td><td></td><td>Nickel</td><td>7440-02-0</td><td>2.54</td><td></td></th<>	Magnesium	7439-95-4	Lead Frame	0.022	0.003	215		Nickel	7440-02-0	2.54	
Bay Basis Trade scale Display	Silver	7440-22-4	Lead Frame	0.359	0.045	3,593		Silicon	7440-21-3	0.45	
Logic field Logic field <thlogic field<="" th=""> <thlogic field<="" th=""></thlogic></thlogic>	Silver Enour Booin	7440-22-4	Die Attach	0.800	0.100	8,000	-	Magnesium	7439-95-4	0.10	
Catalon Medical (2014) 1/21/2 / 201 Unit (000) 0.030 0.000 0.012	Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2,000		Silver	7440-22-4	1.67	
Lipped Usion 1/4442-ris Putting consentent lasks (pink). Mates for averaged at 197°C for 1 loss 0.0337 8.100 0.13 0.012 Disped Usion 100.000 12.000 1.0000 12.000 1.0000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1.000 12.000 1000 12.000 1000 1000 1000.00 1000 1000.00 <t< td=""><td>Gallium arsenide (GaAs)</td><td>1303-00-0</td><td>Chip (Die)</td><td>1.090</td><td>0.136</td><td>10,900</td><td></td><td></td><td>lotal</td><td>100.00</td><td></td></t<>	Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900			lotal	100.00	
Tim Teles Description with part / Main Train variable is for (bring) 0.011 0.8800 0.111 0.8800 0.810 <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> <td>0.13</td> <td>(mg) Total</td> <td>Die Attach</td> <td>% of Total Weight</td> <td>1.00</td>	Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100	0.13	(mg) Total	Die Attach	% of Total Weight	1.00
TOTALS: 100.000 12.500 1,000.000 Total Total 20.00 This semiconductor device and its homogenous materials comply with EU Directive 2020/5/EC (RoHS Directive), EU Directives as been verified via internal design controls, supplier declarations, and /or analytical test data. 0.14 (mg) Total Chip (Die) % of Total Weight 1.09 Total 100.00 100.0	Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.890	0.111	8,900	8352L	Silver	7440-22-4	80.00	
O.0125 g Total Mass Total Total 100.00 This semiconductor device and its homogenous materials comply with BU Directive 2002/SISE (End-of-Life Vehicles (ELV) Directive). Not device and its homogenous materials comply with BU Directive 2002/SISE (End-of-Life Vehicles (ELV) Directive). Not device and its homogenous materials comply with BU Directive 2002/SISE (End-of-Life Vehicles (ELV) Directive). Not device and its homogenous materials comply with BU Directive 2002/SISE (End-of-Life Vehicles (ELV) Directive). Not device and its homogenous materials comply with BU Directive 2002/SISE (End-of-Life Vehicles (ELV) Directive). Not device and its homogenous materials comply with BU Directive 2002/SISE (End-of-Life Vehicles (ELV) Directive). Not device and its homogenous materials comply with BU Directive 2002/SISE (End-of-Life Vehicles (ELV) Directive). Not device and its homogenous materials comply with BU Directive 2002/SISE (End-of-Life Vehicles (ELV) Directive). Not device and its homogenous materials comply with BU Directive 2002/SISE (End-of-Life Vehicles (END) Directive). Not device and its homogenous materials comply with BU Directive 2002/SISE (End-of-Life Vehicles (END) Directive). Not device and its homogenous materials is transmaterials is transmaterial is transmaterials is transmaterials is transmaterials is transmaterials c			TOTALS:	100.000	12.500	1,000,000		Epoxy Resin	Trade secret	20.00	
This 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 0.14 (mg) Total Chip (Die) % of Total Weight 1.09 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data. 0.14 (mg) Total Chip (Die) % of Total Weight 1.09 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data. Total 100.00 Total 0.04 (mg) Total Chip (Die) % of Total Weight 1.09 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data. Total 100.00 Total 0.04 (mg) Total Wire Bond % of Total Weight 0.31 Microchip Technology incorporated Knowledge and belier as the the iso controls in the ronginan packing materials is true and correct to the bast of its howledge and belier, as of the date of the hast of the apresego motion of the servers of the abest of the servers or mybe date data. Doped Gold 7440-57-5 100.00 Wire Bond the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated canont particles as a corres of tab and servers of wide the average weight of the parts and corrective trues in hase been convided by assochare true average weight of the parts and correct to the bast of its how		0.0125	g Total Mass						Total	100.00	
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. If 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 thernical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide. Wolding compounds used by Microchip meet the UL94 V0 flam mability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at thr///L/L/C/m/G/Diable/ang/ages/C/B/Bits/J/L/C/m/G/Diable/ang/ages/C/B/Bits/J/L/C/m/G/Diable/ang/ages/C/B/Bits/J/L/C/m/G/Diable/ang/ages/C/B/Bits/J/L/C/m/G/Diable/ang/ages/C/B/Bits/J/L/C/m/G/Diable/ang/ages/C/B/Bits/J/L/C/m/G/Diable/ang/ages/C/B/Bits/J/L/C/m/G/Diable/ang/ages/C/B/Bits/J/L/C/m/G/Diable/ang/ages/C/B/Bits/J/L/C/m/G/Diable/Ang/ages/C/B/Bits/J/L/C/m/G/Diable/Ang/Ages/C/B/Bits/J/L/C/m/G/Diable/Ang/Ages/C/B/Bits/J/L/C/m/G/Diable/Ang/Ages/C/B/Bits/J/L/C/m/G/Diable/Ang/Ages/C/B/Bits/J/L/C/m/G/Diable/Ang/Ages/C/B/Bits/J/L/C/m/G/Diable/Ang/Ages/C/B/Bits/J/L/C/m/G/Diable/Ang/Ages/C/B/Bits/J/L/C/m/G/Diable/Ang/Ages/C/B/Bits/J/L/C/m/G/Diable/Ages/Bas/C/B/Bits/J/L/C/m/G/Diable/Ages/Bas/C/B/Bits/J/L/C/m/G/Diable/Ages/Bas/C/B/Bits/J/L/C/m/G/Diable/Ages/Bas/C/B/Bits/J/L/C/m/G/Diable/Ages/Bas/C/B/Bits/J/L/C/m/G/Diable/Ages/Bas/C/B/Bits/J/L/C/m/G/Diable/Ages/Bas/C/B/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bas/Bas/Diable/J/Bits/J/L/C/m/G/Diable/Bas/Bas/Diable/J/Bits/J/L/C/m/G/Diable/Bas/Bas/Diable/J/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diable/Bits/J/L/C/m/G/Diab	This semiconductor device and its homogenous materials of Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	comply with EU Directive 2	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (Ro	HS Recast D	irective) and v	with EU	0.14	(mg) Total	Chip (Die)	% of Total Weight	1.09
if 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 Total 100.40 Working compounds used by Microchip meet the ULS4 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at the 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 back methanics dustation in this form concerning substances restricted by RORS in Microchip Technology Incorporated believes the information in store protects and some information may not have been provided in Material Safety Data Sheets provided by yraw material significant toxic metals components. Total 0.04 (mg) Total Wire Bond %, of Total Wight 0.31 Wirechip Technology incorporated does not provide only as estimates of the average weight of anticipated significant toxic metals components. These estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. Microchip Technology Incorporated does not provide only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. Microchip Technology Incorporated does not provide only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. Microchip Technology Incorporated does not provide only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. Microchip Technology Incorporated does not provide does not provide and the subsidiaries are contained in Microchip's standard terms and condition of sale	Compliance with the above EU Directives has been verified	via internal design contro	Is, supplier declarations, and /or analytical test data.				Doped GaAs	Gallium arsenide	1303-00-0	100	
wolding compounds used by witcrochip meet the U24 With mathing standard for plastics. You can access the UL RU IM raming of adabases to obtain a test report at the plastic. 0.04 (mg) Total Wire Bond %of Total Weight 0.31 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 to provide plastics. 0.04 (mg) Total Wire Bond %of Total Weight 0.31 Wire construction 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 to provide bleves the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated cannot upuplers. Information is often provided only as estimates of the average weight of the base of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated and the subsidiaries are contained some information may not have been provided by subcontract assemblers and rest report at upplers. 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. Total 100.00 Wire foot by Microchip Technology Incorporated and its subsidiaries are econtained in Microchip's standard terms and conditions of sale. These are provided in Microchip Technology Incorporated and its subsidiaries are econtained in Microchip's standard terms and conditions of sale. These are p	Technology Incorporated's knowledge and belief as of the d chemical substance, if any, is not below the threshold of re	date of this document, their gulatory concern for any r	egulatory scheme world-wide.	npurity conce	entration of th	, ne					
The protective "tubes" in which the specific product is shipped are made from polyvinyl choride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic. Doped Gold 7440-57-5 100.00 Wicrochip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in 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 raw material supplier. Information is provided only as estimates of the average weight of these parts and the average weight of the set parts and conditions of sale. These astimates of the parts are portided by Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information in Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or family and and the set parts are portided in farts. Total Plating on external leads (pins) - Matter Tin (anneaded at 150°C for 1/(anneaded at 150°C	Molding compounds used by Microchip meet the UL94 V0 fi http://ul.com/global/eng/pages/offerings/industries/chemica	ammability standard for p als/plastics/	lastics. You can access the UL IQ I M family of databases	to obtain a te	est report at		0.04	(mg) Total	Wire Bond	% of Total Weight	0.31
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 guarantee the completeness and accuracy of 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 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. Microchip's quotations, sales order acknowledgement, and invoices. Microchip's quotations is or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports SGS) or of this Certificate of Compliance for semiconductor products. Microchip Technology Incorporated and its used at 150°C for 1 hour Total Microchip Technology Incorporated and the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports SGS) or of this Certificate of Compliance for semiconductor products. Microchip Technology Incorporated and its used at 150°C for 1 hour Total Microchip Technology Incorporated and the active at the party test reports SGS) or of thi	The protective "tubes" in which the specific product is ship box and certain "reels" may be made from PVC plastic.	ped are made from polyvi	nyl chloride (PVC) plastic. "Window envelopes" used to h	hold the pack	ing slip on th	e outer		Doped Gold	7440-57-5	100.00	
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 Wicrochip's quotations, sales order acknowledgement, and invoices. Wicrochip 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 SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated believes the informatio devices in their original packing materials is true and correr guarantee the completeness and accuracy of data in this for suppliers. Supplier information is often protected from disc material suppliers. Information is provided only as estimate These estimates do not include trace levels of dopants, met	n in this form concerning ct to the best of its knowle rm because it has been co closure as trade secrets an as of the average weight of tals, and non-metal materi	substances restricted by RoHS in Microchip Technology dge and belief, as of the date listed in this form. Microchi mpiled based on the ranges provided in Material Safety D d some information may not have been provided by subb i these parts and the average weight of anticipated signifi als contained within silicon devices (silicon IC) in the fini	Incorporated ip Technolog Data Sheets p contract asse icant toxic mo ished parts.	I's semiconde y Incorporate rovided by ra mblers and r etals compon	uctor ed cannot w material aw ents.					
Viicrochip 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 SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated does not provide any w warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, and	varranty, express or implie and its subsidiaries are c invoices.	d, with respect to the information provided in this declar: ontained in Microchip's standard terms and conditions of	ation. The ex f sale. These	clusive, limite are provided	ed product in			Total	100.00	
Tin 7440-31-5 100.00	Microchip disclaims any duty to notify users of updates or o otherwise, suffered by users or third parties as a result of th (SGS) or of this Certificate of Compliance for semiconducto	changes to Material Conter ne users' reliance on the ir or products.	nt Declarations and shall not be liable for any damages, d nformation in Material Content Declarations (MCD) or inde	direct or indir	ect, conseque d party test re	ential or eports	0.11	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	%of Total Weight	0.89
								Tin	7440-31-5	100.00	
									T.10010	400.00	l

QUAE 08 USON

12.500

MICROCHIP Semiconductor Device T	уре: QX6E 06 (L)	sad) XSON 1.5x1.5x0.45mm (QX)	Termi Co	nation Base opper Alloy ((Alloy: Cu)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
Dania Substance	CAS Number	"Contained In"	% Total Weight	man la cast		4.18	(mg) Total	Mold Compound	% ot Total Weight	68.55
Basic Substance	CAS Nulliber	Mold Compound	C1 COF	nig/part	ppin 616.050	0770117	Cilico fueed	60676.96.0	00.00	· · · · · · · · · · · · · · · · · · ·
Enovy Resin	Trade Secret	Mold Compound	3 3 2 5	0.203	33 247	G//UHI	Enovy Resin	Trade Secret	90.00	
Phonolia Bosin	Trade Secret	Mold Compound	3.325	0.203	22 247		Phonolic Rosin	Trade Secret	4.05	
Carbon Black	1333-86-4	Mold Compound	0.206	0.203	2 057		Carbon Black	1222-96-4	4.05	
Calbon Black	7440 50 9	Lood Frame	0.200	1.445	2,007		Calbort Diack	1335-80-4	0.30	<u> </u>
Nickol	7440-50-6	Lead Frame	23.090	1.445	230,900	4.50	(I otai	100.00	04.00
Nickei	7440-02-0	Lead Frame	0.632	0.039	6,320	1.52	(mg) I otal	Lead Frame	% of Total Weight	24.88
Silicon	7440-21-3	Lead Frame	0.112	0.007	1,120	C7025 + Ag	Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.025	0.002	249		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.415	0.025	4,152		Silicon	7440-21-3	0.45	
Ag	7440-22-4	Die Attach	0.990	0.060	9,900		Magnesium	7439-95-4	0.10	
Epoxy resin	I rade secret	Die Attach	0.198	0.012	1,980		Silver	7440-22-4	1.67	
Aliphatic anhydride	Trade secret	Die Attach	0.066	0.004	660			Total	100.00	
2-Butoxyethyl acetate	112-07-2	Die Attach	0.033	0.002	330	0.08	(mg) Total	Die Attach	% of Total Weight	1.32
Polymeric material	Trade secret	Die Attach	0.033	0.002	330	8352L	Ag	7440-22-4	75.00	
Silicon	1303-00-0	Chip (Die)	3.630	0.221	36,300		Epoxy resin	Trade secret	15.00	
Au	7440-57-5	Wire Bond	0.590	0.036	5,899		Aliphatic anhydride	Trade secret	5.00	
impurity	Misc.	Wire Bond	0.000	0.000	1		2-Butoxyethyl acetate	112-07-2	2.50	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.030	0.063	10,300		Polymeric material	Trade secret	3	
		TOTALS:	100.000	6.100	1,000,000			Total	100.00	
	0.0061	n Total Mass				0.22	(mg) Total	Chin (Die)	% of Total Weight	3.63
This semiconductor device and its homogenous materials co Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	mply with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU	(RoHS Recas	t Directive) ar	nd with EU	Doped GaAs	GaAs	1303-00-0 Total	100 100.00	
If a chemical substance is absent from the list above, the che Technology Incorporated's knowledge and belief as of the da chemical substance, if any, is not below the threshold of regu	mical substance is NO te of this document, th llatory concern for any	T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable regulatory scheme world-wide.	e and, to the b e impurity co	est of Microo ncentration c	chip of the	0.04	(mg) Total	Wire Bond	% of Total Weight	0.59
Molding compounds used by Microchip meet the UL94 V0 flat http://ul.com/global/eng/pages/offerings/industries/chemicals	nmability standard for s/plastics/	plastics. You can access the UL iQTM family of database	ses to obtain	a test report	at		Au	7440-57-5	99.99	
The protective "tubes" in which the specific product is shipp box and certain "reels" may be made from PVC plastic.	ed are made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used	to hold the p	acking slip o	n the outer		impurity	Misc.	0.01	
Microchip Technology Incorporated believes the information devices in their original packing materials is true and correct guarantee the completeness and accuracy of data in this form material suppliers. Supplier information is often protected frc raw material suppliers. Information is provided only as estim components. These estimates do not include trace levels of o	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 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. 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 are applied as the average metal material contract on within solitoen dwince divide a path of the average weight of these parts and the average weight of anticipated significant toxic metals are applied as the average metal material contract content within solitoen dwince divide a path of the average weight of anticipated significant toxic metals are applied as the average metal material contract as continued within solitoen dwince divide a diverse layed on the average weight of anticipated significant toxic metals are applied as the average metal material contraction contained within solitoen dwince divide a path and the average weight of anticipated significant toxic metals are applied as the average weight of the set as a set of the average weight of anticipated significant toxic metals are applied as the average metal material contained as the average weight of the set of the avera							Total	100.00	
Microchip Technology Incorporated does not provide any war product warranties provided by Microchip Technology Incorp in Microchip's quotations, sales order acknowledgement, and	rranty, express or impl orated and its subsidia invoices.	ied, with respect to the information provided in this dec aries are contained in Microchip's standard terms and c	claration. The conditions of	exclusive, lii sale. These a	mited re provided	0.06	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.03
Microchip disclaims any duty to notify users of updates or ch otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor	anges to Material Cont users' reliance on the products.	ent Declarations and shall not be liable for any damage information in Material Content Declarations (MCD) or i	s, direct or in Independent	direct, conse hird party tes	equential or st reports		Tin	7440-31-5	100.00	
								Total	100.00	
										100.000

Semiconductor Device Type: CASE Object Access Opposite Type At 4 Made Compound Control Contro Control Control Control Control Contro Contro Contr	Місвоснір	_		Termir Co	nation Base /	Alloy: Cu)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling
Basic Distance Cost Num Sub-Component Weight mpp R.4 OPTION Note Component Sub-Component Sub-Component<	Semiconductor Device	e Type: QX8E 08 (Le	ad) XSON 2x2x0.45mm (Q7)								es
Base Substratice Constraint Type in Parts Parts <t< th=""><th></th><th></th><th>"Contained In"</th><th>% Total</th><th></th><th></th><th>8.14</th><th>(mg) Total</th><th>Mold Compound</th><th>%ot Total Weight</th><th>79.8</th></t<>			"Contained In"	% Total			8.14	(mg) Total	Mold Compound	%ot Total Weight	79.8
Bits of the set of th	Basic Substance	CAS Number	Sub-Component	weight	mg/part	ppm					n
Physics Total Total State Note (concount State State Calctor Black 1333-64 Mod (concount 0.207 0.208 2.207 0.308 2.507 Calctor Black 1333-64 Last Firms 0.001 10000 10000 </td <td>Silica, fused</td> <td>50676-86-0</td> <td>Mold Compound</td> <td>71.820</td> <td>7.326</td> <td>718,200</td> <td>G//UHI</td> <td>Silica, fused</td> <td>50575-85-0 Trada Saarat</td> <td>90.00</td> <td></td>	Silica, fused	50676-86-0	Mold Compound	71.820	7.326	718,200	G//UHI	Silica, fused	50575-85-0 Trada Saarat	90.00	
Column 133.9494 Mod Columnia 2020 0.023 2.024 2.024 Column 7440-004 Lash Frame 10.00 </td <td>Epoxy Resili</td> <td>Trade Secret</td> <td>Mold Compound</td> <td>3.070</td> <td>0.395</td> <td>30,703</td> <td></td> <td>Epuxy Resili Dhanalia Baain</td> <td>Trade Secret</td> <td>4.00</td> <td></td>	Epoxy Resili	Trade Secret	Mold Compound	3.070	0.395	30,703		Epuxy Resili Dhanalia Baain	Trade Secret	4.00	
Uncertain Product of the second	Carbon Plack	1222.96.4	Mold Compound	0.220	0.395	2 204		Corbon Block	1222.96.4	4.65	
Nota:7440-22Lead Finite0.2272007107(m) TotalLead FiniteNo Total Waget10.5Mission7440-714Lead Finite0.0110.005105000 <td>Copper</td> <td>7440-50-8</td> <td>Lead Frame</td> <td>10,000</td> <td>1.020</td> <td>2,394</td> <td></td> <td>Calbull Black</td> <td>Total</td> <td>0.30</td> <td>U</td>	Copper	7440-50-8	Lead Frame	10,000	1.020	2,394		Calbull Black	Total	0.30	U
Size 7440-21-3 Least Times 0.047 0.005 473 Crop2 + Aq Crop2 + Aq Concert 7440-23-2 Concert 7440-23-4 Co	Nickel	7440-02-0	Lead Frame	0.267	0.027	2 667	1.07	(ma) Total	Load Eramo	% of Total Weight	10.5
Image: Example in the second of the	Silioon	7440-02-0	Load Frame	0.207	0.027	472	C7025 - Ar	(ing) rotai	2440 50 8		10.5
$ \frac{1}{1000} \frac{1}{100$	Magnesium	7440-21-3	Lead Frame	0.047	0.005	473	C7025 + Ag	Nickel	7440-50-8	95.24	
Ag 7440224 De Katein 0.500 0.007 6.025 Exponential conjunction Table servet De Attech 0.013 0.011 1.025 Algebraic Table servet De Attech 0.013 0.014 1.025 Algebraic Table servet De Attech 0.014 0.024 1.025 Algebraic Table servet De Attech 0.014 0.024 1.025 Algebraic Table servet De Attech 0.014 0.024 1.025 Algebraic Table servet De Attech 0.024 1.025 1.020 Algebraic Table servet De Attech De Attech 0.024 1.020	Silver	7439-93-4	Lead Frame	0.0175	0.001	1 752		Silicon	7440-02-0	2.34	
Excert result Total scored Die Allacia 0.013 0.011 1.23 Die Allacia 0.013 0.011 1.23 Total scored 0.012 0.011 0.123 0.011 0.123 0.011 0.123 0.011 0.123 0.012 0.020 1.2612/24 1.2612/24 0.02 0.002 1.261 0.002 1.2612/24 1.261 0.002 1.2612/24 1.261 0.002 1.2612/24 1.261 0.002 1.2612/24 1.261 0.002 1.2612/24 1.261 0.002 1.2612/24 1.261 0.002 1.2612/24 1.261 0.002 1.2612/24 1.261 0.002 1.2612/24 1.261 0.002 1.261 0.002 1.261 0.002 1.261 0.002 1.261 0.2612/24 1.261 0.2612/24 1.261 0.2612/24 1.261 0.261 1.261 0.261 1.261 0.261 1.261 0.261 1.261 0.261 1.261 0.261 1.261 0.261 0.261 0.261 0.261 0.26	Silver	7440-22-4	Dia Attach	0.175	0.018	1,752		Magnasium	7440-21-3	0.45	
All public service Task sector Die Allach 0.008 0.004 175 Die Allach 100.00 2-Butwagethy lacetia Trade secret Die Allach 0.019 0.002 188 0.99 (m) Total Die Allach 7.50 7.50 Glada 103.00-0 Clip (Die Network) 100.00 188 0.99 (m) Total Die Allach 7.50 </td <td>Ay Enowy rogin</td> <td>Trado coorot</td> <td>Die Attach</td> <td>0.303</td> <td>0.037</td> <td>1 1 25</td> <td></td> <td>Silver</td> <td>7439-95-4</td> <td>1.67</td> <td></td>	Ay Enowy rogin	Trado coorot	Die Attach	0.303	0.037	1 1 25		Silver	7439-95-4	1.67	
2-Biosynethylinetiane 1112-07-2 Die Atlach 0.012 113 0.002 113 0.002 113 0.012 113	Aliphatia aphydrida	Trade secret	Die Attach	0.113	0.011	1,125		Silver	7440-22-4	1.07	U I
Leading Trial (201 Doc Attach Dot 13 Dot 12 Dot 13	Aliphatic annyunde	112 07 2	Die Attach	0.038	0.004	375	0.00	()	i otai	100.00	0.75
Production Production Output of the statute Product	2-Buloxyeinyi aceiale	112-07-2	Die Attach	0.019	0.002	100	0.08	(mg) I otal	Die Attach	% of 1 otal weight	0.75
Cash in the specific product is aligned are made from poly/with closely (PVC) is allow (PVC) in the specific product is aligned are made from poly/with closely (PVC) is allow (PVC) in the specific product is aligned are made from poly/with closely (PVC) plastic. "Window envelopes" used to hold the packing give in their original packing methanis is form. Microchip Technology Incorporated Section (PVC) is and the average weight of these parts and the internation provided in Microchip's tandard for made and selection in Material Content Declarations, MiCD) or independent third party test reports Microchip Sector (Sector) Total Total Total Total 0.000 0.000 0.000 0.000 0.000 0.000 0.000 100.000 0.000 0.000 0.000 0.000 0.000 0.000 100.000 0.000 0.000 0.000 0.000 0.000 0.000 100.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Polymeric material	I rade secret	Die Attach	0.019	0.002	188	8352L	Ag	7440-22-4	75.00	
Codd 7440-51-5 Puring on external less Quick Write Bond 20.000<	GaAs	1303-00-0	Chip (Die)	7.500	0.765	75,000		Epoxy resin	Irade secret	15.00	
Im Image of control lates prior. Mark the functional data (prior). The transformation of the control lates of the contrecontrol lates of the contrecontrol lates of the contr	Gold	7440-57-5	Wire Bond	0.200	0.020	2,000		Aliphatic anhydride	Trade secret	5.00	
LICLAS: 100.000 102.00 100.000 Image accret Trate 100.000 This semiconductor device and its homogenous materials comply with EUD Directive 2002/05/EC (RoHS Directive), EUD	lin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.128	12,500		2-Butoxyethyl acetate	112-07-2	2.50	
O.0102 g Total Mass Total Mass Total Mass Total Mass Total Mass Dhis seniconductor device and its homogenous materials comply with EU Directive 2002/94/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU 0.77 (mg) Total Chip (Die) % of Total Weight 7.5 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 5.77 (mg) Total Chip (Die) % of Total Weight 7.5 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 5.77 (mg) Total Chip (Die) % of Total Weight 7.5 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 5.77 (mg) Total Weight 7.5 Molding 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 hop with me outer for my PC plastic. 0.02 (mg) Total Wire Bond % of Total Weight 0.2 Upped Gold 7.4067-5 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00			TOTALS:	100.000	10.200	1,000,000		Polymeric material	Trade secret	3	
This see include devides and its home genous materials comply with EU Directive 2002/55/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Reast Directive) and with EU Directive 2002/55/EC (RoHS LY) Directive 2002/55/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Reast Directive) and with EU Directive 2002/55/EC (RoHS Directive). 0.77 (mg) Total Chip (De) %.of Total Weight 7.5 Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data. 100.00 10		0.0102	g Total Mass						Total	100.00	
Including motion points as non-negative as an one-task of the task of t	Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive). Compliance with the above EU Directives has been verified v If a chemical substance is absent from the list above, the ch	via internal design control emical substance is NOT a	s, supplier declarations, and /or analytical test data. an intentional ingredient in the semiconductor device an	d, to the best	t of Microchip)	Doped GaAs	GaAs	1303-00-0 Total	100 100.00]
The protective tubes in which the specific product is singbed are made from polyvinyl chloride (PVC) plastic. "window envelopes used to hold the packing slip on the duter Gold 7440-57-5 100.00 Microchip Technology Incorporated believes the information in this form concerning substances restricted by ROHS in Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by subcontract assemblers and raw material suppliers. 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 success (silicon IC) in the finished parts. Image: Total information is provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates or 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 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. Image: material suppliers. Information is provided by subcontract assemblers and raw material supplier information and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Material (mg) Total information is for the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports Image: material information in Material Content Declarations (MCD) or independent third party test reports Im	Chemical substance, if any, is not below the threshold of reg Molding compounds used by Microchip meet the UL94 Vo file http://ul.com/global/eng/pages/offerings/industries/chemical	aute of this document, the gulatory concern for any re ammability standard for p Is/plastics/	agulatory scheme world-wide.	to obtain a te	est report at		0.02	(mg) Total	Wire Bond	% of Total Weight	0.2
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 guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided by 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. Plating on external leads (pins) Matter Tin <i>j. nonealed at</i> 150°C for <i>j. nour j. nour</i>	box and certain "reels" may be made from PVC plastic.	ped are made from polyvi	iyi chioride (PVC) plastic. "Window envelopes" used to r	fold the pack	ing slip on th	ie outer	Doped Gold	Gold	7440-57-5	100.00	
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 the function of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.	Vertices 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 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 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 naterial 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.								Total	100.00	
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 (SGS) or of this Certificate of Compliance for semiconductor products.	Microchip Technology Incorporated does not provide any wa warranties provided by Microchip Technology Incorporated Microchip's quotations, sales order acknowledgement, and i	crochip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited produ rranties 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.					0.13	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Total 100.00	Microchip disclaims any duty to notify users of updates or c otherwise, suffered by users or third parties as a result of th (SGS) or of this Certificate of Compliance for semiconductor	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 S) or of this Certificate of Compliance for semiconductor products.						Tin	7440-31-5	100.00	
									Total	100.00	

Місвоснір	Semiconductor Device Type: XX8E 08 (Lead) X2SON 2x2x0.35mm (X8)		Terr (nination Bas Copper Alloy	e Alloy: (Cu)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Ty	pe: XX8E 08 (L	.ead) X2SON 2x2x0.35mm (X8)								e3
		"Contained In"	% Total				() - ()			54.00
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	2.86	(mg) Total	Mold Compound	% of Total Weight	51.99
Silica, fused	60676-86-0	Mold Compound	46.791	2.574	467,910	EME G770HJ	Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	2.522	0.139	25,215		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.522	0.139	25,215		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.156	0.009	1,560		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	38.649	2.126	386,488			Total	100.00	
Nickel	7440-02-0	Lead Frame	1.031	0.057	10,307	2.23	(mg) Total	Lead Frame	% of Total Weight	40.58
Silicon	7440-21-3	Lead Frame	0.183	0.010	1,826	C7025 + Ag	Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.041	0.002	406		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.677	0.037	6,773	_	Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	1.888	0.104	18,880	-	Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.472	0.026	4,720	-	Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.360	0.130	23,600			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
lin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.990	0.109	19,900	8352L	Silver	7440-22-4	80.00	
		TOTALS:	100.000	5.500	1,000,000		Epoxy Resin	I rade secret	20.00	
	0.0055	g Total Mass						Total	100.00	
This semiconductor device and its homogenous materials con Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	nply with EU Directive	2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recas	st Directive) ai	nd with EU	0.13	(mg) Total	Chip (Die)	% of Total Weight	2.36
Compliance with the above LO Directives has been verified via	internal design conti	ors, supplier declarations, and for analytical test data.				Doped GaAs	Gailiutti aiseitiue	1303-00-0	100	
If a chemical substance is absent from the list above, the cher Technology Incorporated's knowledge and belief as of the dat substance, if any, is not below the threshold of regulatory con	nical substance is NO e of this document, th cern for any regulator	T an intentional ingredient in the semiconductor device ere is no credible reason to believe that the unavoidable y scheme world-wide.	and, to the l impurity co	best of Microconcentration of	hip of the chemical			lotal	100.00	
Molding compounds used by Microchip meet the UL94 V0 flam http://ul.com/global/eng/pages/offerings/industries/chemicals	mability standard for plastics/	plastics. You can access the UL iQTM family of databas	es to obtain	a test report	at	0.04	(mg) Total	Wire Bond	% of Total Weight	0.72
The protective "tubes" in which the specific product is shippe and certain "reels" may be made from PVC plastic.	d are made from poly	vinyl chloride (PVC) plastic. "Window envelopes" used t	o hold the p	acking slip o	n the outer box		Doped Gold	7440-57-5	100.00	
Microchip Technology Incorporated believes the information i devices in their original packing materials is true and correct t guarantee the completeness and accuracy of data in this form suppliers. Supplier information is often protected from disclo suppliers. Information is provided only as estimates of the ave estimates do not include trace levels of dopants, metals, and t	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 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. 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.							Total	100.00	
Microchip Technology Incorporated does not provide any war warranties provided by Microchip Technology Incorporated ar Microchip's quotations, sales order acknowledgement, and im	anty, express or impl d its subsidiaries are voices.	ied, with respect to the information provided in this dec contained in Microchip's standard terms and conditions	laration. The s of sale. The	e exclusive, li ese are provid	mited product led in	0.11	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.99
Microchip disclaims any duty to notify users of updates or cha otherwise, suffered by users or third parties as a result of the (SGS) or of this Certificate of Compliance for semiconductor p	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 iGS) or of this Certificate of Compliance for semiconductor products.						Tin	7440-31-5	100.00	
						L		Total	100.00	
	-)			100.000

Місвоснір	Semiconductor Device Type: B3KE 48 TFBGA 6x8x1.2 mm (8T)				Alloy: Cu)		Package Homo 8.1 Electronics (e.	geneous Materials: g. pc boards, display	s)	JEDEC 97 Product Marking and/or Pkg. Labeling
Semiconductor Device Type:	B3KE 48 TFB0	GA 6x8x1.2 mm (8T)								e1
Basis Substance		"Contained In"	% Total Weight	m a la ant		47.33	(mg) Total	Mold Compound	% ot Total Weight	50.3
EUSED SILICA	60676-86-0	Mold Compound	38.981	36 681	389 810	GE-100L	FUSED SILICA	60676-86-0	77.50	
EPOXY RESINS, CURED	Trade Secret	Mold Compound	4.905	4.615	49,048		EPOXY RESINS, CURED	Trade Secret	9.75	
HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4.905	4.615	49,048	MOLECULAR E	POXY / EPOXY PHENOL RESIN	Trade Secret	9.75	
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.258	1.184	12,580		CRYSTALLINE SILICA	14808-60-7	2.50	
CARBON BLACK	1333-86-4	Mold Compound	0.252	0.237	2,515	4	CARBON BLACK	1333-86-4	0.50	
Copper Close fibere	7440-50-8	Lead Frame	8.052	1.5//	80,524	04.44	(I otal	100.00	00.40
Gidss libers	03997-17-3	Lead Frame	4.000	4.517	48,000	21.11 BT Substrate J	(mg) i otai	Lead Frame	% of 1 otal weight	22.43
						Solder Mask				
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	4.800	4.517	48,000	(AUS308)	Copper	7440-50-8	35.90	
Silica, chemically prepared	7631-86-9	Lead Frame	1.794	1.689	17,944	1	Glass fibers	65997-17-3	21.40	
Nickel	7440-02-0	Lead Frame	0.875	0.823	8,748	4	Phenol, polymer	9003-36-5	21.40	
Barite Magnopium silicote	1727-43-7	Lead Frame	0.561	0.528	5,608	4	Silica, chemically prepared	7631-86-9	8.00	
Araldite GV 250	25068-38-6	Lead Frame	0.449	0.422	4,480	1	Nickel	7440-02-0	3.90	
(2-Methow/methylethow/)propanol	34590-94-8	Lead Frame	0.449	0.422	4,480		Magnesium silicate	1/27-43-7	2.30	
Misc.	system	Lead Frame	0.336	0.317	3,365		Araldite GY 250	25068-38-6	2.00	
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.112	0.106	1,122	(2-Met	hoxymethylethoxy)propanol	34590-94-8	0.80	
Gold	7440-57-5	Lead Frame	0.022	0.021	224		Misc.	system	1.50	
Silver	7440-22-4	Die Attach	0.552	0.519	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	0.130	1,380		Gold	7440-57-5	0.10	
Silicon	7440-21-3	Chip (Die)	7.650	7.199	76,500			Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.860	0.809	8,600	0.65	(mg) Total	Die Attach	% of Total Weight	0.69
lin Silver	7440-31-5	Plating on external leads (pins)	17.257	16.239	172,569	2000	Silver	7440-22-4	80.00	
Coppor	7440-22-4	Plating on external leads (pins)	0.723	0.080	7,220	1	Fileholic lesin	20034-02-0 Total	20.00	
Сорреі	7440-30-0	TOTAL	S: 100.000	94.100	1.000.000	7 20	(mg) Total	Chin (Die)	% of Total Weight	7 65
	0.09/1 a T	otal Mass	20	000	.,,	Donod Silicon	Doped Silicon	7440-21-3	100	1.00
This semiconductor device and its homogenous materials comply Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).	with EU Directive 2002	2/95/EC (RoHS Directive), EU Directive 2011/65/	EU (RoHS Recas	t Directive) ar	nd with EU	0.81	(mg) Total	Wire Bond	% of Total Weight	0.86
Compliance with the above EU Directives has been verified via inte	rnal design controls.	supplier declarations, and /or analytical test dat	a.				Doped Gold	7440-57-5	100.00	
If a chemical substance is absent from the list above, the chemical Technology Incorporated's knowledge and belief as of the date of t chemical substance, if any, is not below the threshold of regulator	substance is NOT an this document, there is y concern for any regu	intentional ingredient in the semiconductor dev no credible reason to believe that the unavoid latory scheme world-wide.	vice and, to the able impurity co	pest of Microc Incentration o	hip f the			Total	100.00	
Molding compounds used by Microchip meet the UL94 V0 flammat http://ul.com/global/eng/pages/offerings/industries/chemicals/plas	oility standard for plast tics/	tics. You can access the UL iQTM family of data	bases to obtain	a test report a	at	17.00	(mg) Total	Plating on external leads (pins)	% of Total Weight	18.07
The protective "tubes" in which the specific product is shipped are box and certain "reels" may be made from PVC plastic.	e made from polyvinyl	chloride (PVC) plastic. "Window envelopes" us	ed to hold the p	acking slip or	n the outer		Tin	7440-31-5	95.50	
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 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. 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.							Silver	7440-22-4	4.00	
Microchip Technology Incorporated does not provide any warranty product warranties provided by Microchip Technology Incorporate in Microchip's quotations, sales order acknowledgement, and invo	, express or implied, v d and its subsidiaries ices.	vith respect to the information provided in this are contained in Microchip's standard terms an	declaration. The d conditions of	e exclusive, lir sale. These a	nited re provided		Copper	7440-50-8	0.50	
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 S) or of this Certificate of Compliance for semiconductor products.								Total	100.00	
						04.10)			100.00

MICROCHIP Semiconductor Device Type:	BG 121 (Lea	a) TFBGA 10x10x1 (2x)	Termin Cop	ation Base oper Alloy ((Alloy: Cu)		Package Homogeneou: 8.1 Electronics (e.g. pc bo	s Materials: ards, displays)		JEDEC 97 Product Marking and/or Pkg. Labeling e1
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	nnm	107.44	(mg) Total	Mold Compound /	% ot Total Weight	55.84
fused silica	60676-86-0	Mold Compound / Halogen-Eree	47.464	01 321	474 640	GE-1001 EC-S	fused silica	60676-86-0	85.00	l i i i i i i i i i i i i i i i i i i i
solid epoxy resin	25068-38-6	Mold Compound / Halogen-Free	3.909	7.521	39.088		solid epoxy resin	25068-38-6	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	
	65007 17 2	Substrate / Solder Medic (AUS200)Hologen Free	4 607	0.000	46.067	41.60	(mg) Total	Substrate + Solder Mask (AUS308)	% of Total Weight	21.62
Glass libers	0002.26.5	Substrate + Solder Mask (AUS308)Halogen Free	4.627	0.902	40,207		0	Halogen-Free	25.00	1
Silica, chemically prepared	9003-36-5	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46,267	CCL-HL832N	Copper Class fibors	7440-50-8	35.90	
Silica, chemically prepared	7031-00-9	Substrate + Solder Mask (A03308)Halogen-Free	1.730	3.320	17,290		Phenol formaldebyde	00997-17-3	21.40	
Nickel	7440-02-0	Substrate + Solder Mask (AUS308)Halogen-Free	0.843	1.622	8.432		(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	0.108	0.208	1,081		(2-Methoxymethylethoxy)propanol	34590-94-8	0.80	
Gold	7440-57-5	Substrate + Solder Mask (AUS308)Halogen-Free	0.022	0.042	216		Misc.	system	1.50	
Silver (Ag)	7440-22-4	Die Attach	0.550	1.059	5,502		Aluminium-hydroxide-oxide	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			Total	100.00	
Deburyaria Desia	Trada Oranat	Die Attest	0.004	0.040	000	1.46	(mg) Total	D: 444-1	% of Total	0.76
Polymeric Resin	Trade Secret	Die Attach	0.021	0.040	206			Die Attach	Weight	1
For reporting purposes, silicon integrated circuit presumed to be all silicon	7440-21-3	Chip (Die)	7.940	15.277	79,400	2300	Silver (Ag)	7440-22-4	72	
Lin (Sn)	7440-31-5	Solder Ball (SAC405)	0.512	23.519	122,240	-	Aeriote Resin	Trade Secret	18	
Silver (Ag)	7440-22-4	Solder Ball (SAC405)	0.064	0.965	5,120		Achate Resin	Trade Secret	2	
Gold (Au)	7440-57-5	Bond Wire	1.030	1 981	10 296 00		P divinenci Nesin	Total	100.00	
	7440.05.0	Dend Wite	0.040	0.000	404.00	15.28	Total (mg)	Chip (Die)	% of Total	7.94
Palladium (Pd)	7440-05-3		0.010	0.020	104.00		For reporting purposes, silicon integrated	7440-21-3	100	
	0.1924	q Total Mass	100.000	192.400	1,000,000		circuit presumed to be all silicon	Total	100.00	
This semiconductor device and its homogenous materials comply	with ELL Directive	2002/05/EC (RoHS Directive) ELL Directive 2011/65/		cast Directiv	(a) and				0/ of Total	
with ELI Directive 2002/53/EC (End-of-I ife Vehicles (ELV) Directive)	with LO Directive	2002/35/EC (Nono Directive), EO Directive 2011/05/		cast Directiv	ej anu	24.63	(mg) Total	Calder Dall (CAC405)	% of Total	12.80
with EO Directive 2002/33/EC (End-Or-Ene Venicles (EEV) Directive).								Solder Ball (SAC405)	weight	I
Compliance with the above EU Directives has been verified via inte	rnal design contr	ols, supplier declarations, and /or analytical test da	ita.			SAC405	Tip (Sp)	7440-31-5	95 50	
							111 (51)	7440-31-3	33.30	
If a chemical substance is absent from the list above, the chemical	substance is NO	Γ an intentional ingredient in the semiconductor de	evice and, to t	he best of Mi	icrochip					
Technology Incorporated's knowledge and belief as of the date of t	his document, the	ere is no credible reason to believe that the unavoid	dable impurity	/ concentrati	ion of the		Silver (Ag)			
chemical substance, if any, is not below the threshold of regulatory	concern for any	regulatory scheme world-wide.						7440.00.4	1.00	
								7440-22-4	4.00	
Molding compounds used by Microchip meet the UL94 V0 flammat	ility standard for	plastics. You can access the UL iQTM family of dat	abases to obt	ain a test rep	port at		Copper (Cu)	7440-50-8		
http://di.com/gioba/eng/pages/onenings/muustries/chemicals/plas	103/								0.50	
The protective "tubes" in which the specific product is shipped are outer box and certain "reels" may be made from PVC plastic.	made from poly	vinyl chloride (PVC) plastic. "Window envelopes" u	sed to hold th	e packing sl	ip on the			Total	100.00	
Microchip Technology Incorporated believes the information in this	s form concerning	g substances restricted by RoHS in Microchip Tech	nology Incorp	orated's						
semiconductor devices in their original packing materials is true a	nd correct to the l	best of its knowledge and belief, as of the date liste	d in this form	. Microchip						
Technology Incorporated cannot guarantee the completeness and	accuracy of data i	in this form because it has been compiled based or	n the ranges p	rovided in N	laterial				% of Total	
Safety Data Sheets provided by raw material suppliers. Supplier int	ormation is often	protected from disclosure as trade secrets and so	me informatio	on may not h	ave been	2.00	(mg) Total	Bond Wire	Weight	1.04
provided by subcontract assemblers and raw material suppliers. In	formation is prov	rided only as estimates of the average weight of the	ese parts and	the average	weight of				noight	
anticipated significant toxic metals components. These estimates	do not include tra	ce levels of dopants, metals, and non-metal materia	als contained	within silico	n devices					
(silicon IC) in the finished parts.										
Microchip Technology Incorporated does not provide any warranty	, express or impli	ed, with respect to the information provided in this	declaration.	The exclusiv	e, limited					
product warranties provided by Microchip Technology Incorporate	d and its subsidia	ries are contained in Microchip's standard terms a	nd conditions	of sale. The	se are					
provided in Microchip's quotations, sales order acknowledgement,	and invoices.					1	Gold (Au)	7440-57-5	99.0000	
Microchin disclaims any duty to notify usors of undates at shares	to Material Cont	ant Declarations and shall not be lights for any dam	anae diroct a	r indirect						
approximption of the second se	recult of the user	on Decidiations and shall not be liable for any dam	ages, direct (n munect,	nondont	1	Pollodium (Pd)			
third party test reports (SGS) or of this Cartificate of Compliance for	result of the users	noducts	eciarations (IV	or inde	pendent		Fallaulum (P0)			
and party toor reports (000) or or this defundate or compliance it		p						7440-05-3	1.0000	
								Total	100.00	
										100.00