



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 (Sb_2O_3) 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 brominated 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, if any, 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.



Semiconductor Device Type: EB 03 (Lead) DDPAK (F4)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	544.12	(mg) Total	Mold Compound	% of Total Weight	39.21
Fused Silica	60676-86-0	Mold Compound	34.505	478.823	345,048	CEL-9240HF10	Fused Silica	60676-86-0	88.00	Total 100.00
Epoxy Resin 1	Trade Secret	Mold Compound	1.274	17.684	12,743		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	1.176	16.324	11,763		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.764	24.485	17,645		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.098	1.360	980		Carbon Black	1333-86-4	0.25	
Undeclared	Trade Secret	Mold Compound	0.392	5.441	3,921		Undeclared	Trade Secret	1.00	
Copper	7440-50-8	Lead Frame	58.494	811.716	584,936		Total 100.00			
Tin	7440-31-5	Lead Frame	0.099	1.368	986	828.87	(mg) Total	Lead Frame	% of Total Weight	59.73
Silver	7440-22-4	Lead Frame	1.138	15.790	11,379	HCL-12S + Aq	Copper	7440-50-8	97.93	Total 100.00
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	Total 100.00
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		Proprietary Curing agent & Hardener	Trade Secret	3	
1.3877 g Total Mass										
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 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 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 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 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.										
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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.										
						3.75	Total (mg)	Chip (Die)	% of Total Weight	0.27
						Silicon		7440-21-3	100	Total 100.00
						0.97	(mg) Total	Wire Bond	% of Total Weight	0.07
						Gold		7440-57-5	100	Total 100.00
						8.46	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.61
								7440-31-5	100.00	Total 100.00
						1,387.700				100.000



Semiconductor Device Type: ET 05 (Lead) DDPAK (J7)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Fused Silica	60676-86-0	Mold Compound	23.373	463.693	233.728					
Epoxy Resin 1	Trade Secret	Mold Compound	0.863	17.125	8.632					
Epoxy Resin 2	Trade Secret	Mold Compound	0.797	15.808	7.968					
Phenol Resin	Trade Secret	Mold Compound	1.195	23.712	11.952					
Carbon Black	1333-86-4	Mold Compound	0.066	1.317	664					
Undeclared	Trade Secret	Mold Compound	0.266	5.269	2.656					
Copper	7440-50-8	Lead Frame	70.627	1401.171	706.271					
Tin	7440-31-5	Lead Frame	0.119	2.361	1.190					
Silver	7440-22-4	Lead Frame	1.374	27.257	13.739					
Silver (Ag)	7440-22-4	Die Attach	0.071	1.402	707					
Proprietary Resin	Trade Secret	Die Attach	0.017	0.330	167					
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.003	0.054	27					
Silicon	7440-21-3	Chip (Die)	0.620	12.300	6.200					
Gold	7440-57-5	Wire Bond	0.040	0.794	400					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.570	11.308	5.700					
1.9839 g Total Mass			TOTALS:	100.000	1,983.900	1,000.000				

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 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.

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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/offering/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.

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526.92		(mg) Total		Mold Compound		% of Total Weight		26.56		
CEL-9240HF10	Fused Silica	60676-86-0	88.00							
	Epoxy Resin 1	Trade Secret	3.25							
	Epoxy Resin 2	Trade Secret	3.00							
	Phenol Resin	Trade Secret	4.50							
	Carbon Black	1333-86-4	0.25							
	Undeclared	Trade Secret	1.00							
	Total			100.00						
1430.79		(mg) Total		Lead Frame		% of Total Weight		72.12		
HCL-12S + Ag	Copper	7440-50-8	97.93							
	Tin	7440-31-5	0.17							
	Silver	7440-22-4	1.91							
	Total			100.00						
1.79		(mg) Total		Die Attach		% of Total Weight		0.09		
84-11LMISR4	Silver (Ag)	7440-22-4	79							
	Proprietary Resin	Trade Secret	19							
	Proprietary Curing agent & Hardener	Trade Secret	3							
Total			100.00							
12.30		Total (mg)		Chip (Die)		% of Total Weight		0.62		
		Doped Silicon	7440-21-3	100						
Total			100.00							
0.79		(mg) Total		Wire Bond		% of Total Weight		0.04		
		JGPSSI (D02)	7440-57-5	100						
Total			100.00							
11.31		(mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		% of Total Weight		0.57		
		Tin	7440-31-5	100.00						
Total			100.00							
1,983.900		Total		100.00		100.000				



Semiconductor Device Type: MC 08 (Lead) DFN 2x3 mm (B3 / BY)			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				
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	7.49	(mg) Total	Mold Compound	% of Total Weight	48			
Silica, fused	60676-86-0	Mold Compound	43.200	6.739	432,000	EME- G770HCD	Silica, fused	60676-86-0	90.00	Total 100.00			
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.328	0.363	23,280		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85				
Phenolic Resin	Trade Secret	Mold Compound	2.328	0.363	23,280		Phenolic Resin	Trade Secret	4.85				
Carbon Black	1333-86-4	Mold Compound	0.144	0.022	1,440		Carbon Black	1333-86-4	0.30				
Copper	7440-50-8	Lead Frame	44.421	6.930	444,212	7.11 (mg) Total		Lead Frame	% of Total Weight	45.6			
Tin	7440-31-5	Lead Frame	0.114	0.018	1,140	EFTEC64T + Ag	Copper	7440-50-8	97.42	Total 100.00			
Silver	7440-22-4	Lead Frame	0.869	0.136	8,687		Tin	7440-31-5	0.25				
Zinc	7440-66-6	Lead Frame	0.082	0.013	821		Silver	7440-22-4	1.91				
Chromium	7440-47-3	Lead Frame	0.114	0.018	1,140		Zinc	7440-66-6	0.18				
Silver	7440-22-4	Die Attach	0.187	0.029	1,872		Chromium	7440-47-3	0.25				
Acrylate resins Proprietary	Trade Secret	Die Attach	0.043	0.007	432								
Treated silica	Trade Secret	Die Attach	0.005	0.001	48	0.04 (mg) Total		Die Attach	% of Total Weight	0.24			
Heterocyclic organic compound	Trade Secret	Die Attach	0.005	0.001	48	8200T	Silver	7440-22-4	78	Total 100.00			
Silicon	7440-21-3	Chip (Die)	1.640	0.256	16,400		Acrylate resins Proprietary	Trade Secret	18				
Gold	7440-57-5	Wire Bond	0.400	0.062	4,000		Treated silica	Trade Secret	2				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.120	0.643	41,200		Heterocyclic organic compound	Trade Secret	2				
0.0156 g Total Mass			TOTALS:	100.000	15.600	1,000,000	0.26 Total (mg)		Chip (Die)	% of Total Weight	1.64		
									Doped Silicon		7440-21-3	100	Total 100.00
									0.06 (mg) Total		Wire Bond	% of Total Weight	0.4
									Gold		7440-57-5	100	Total 100.00
									0.64 (mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.12
									Tin		7440-31-5	100.00	Total 100.00
									15.600				100.000

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: MF 08 (Lead) DFN 3x3 mm (A7 / AJ)				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	
Basic Substance	CAS Number	"Contained in" Sub-Component	% Total Weight	mg/part	ppm	12.20 (mg) Total		Mold Compound	% of Total Weight	51.24	
Silica, fused	60676-86-0	Mold Compound	46.116	10.976	461,160	EME- G770HCD	Silica, fused	60676-86-0	90.00		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.485	0.591	24,851		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85		
Phenolic Resin	Trade Secret	Mold Compound	2.485	0.591	24,851		Phenolic Resin	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.154	0.037	1,537		Carbon Black	1333-86-4	0.30		
						Total			100.00		
Copper	7440-50-8	Lead Frame	38.576	9.181	385,763	9.42 (mg) Total		Lead Frame	% of Total Weight	39.6	
Tin	7440-31-5	Lead Frame	0.099	0.024	990	194+AG	Copper	7440-50-8	97.42		
Silver	7440-22-4	Lead Frame	0.754	0.180	7,544		Tin	7440-31-5	0.25		
Zinc	7440-66-6	Lead Frame	0.071	0.017	713		Silver	7440-22-4	1.91		
Chromium	7440-47-3	Lead Frame	0.099	0.024	990		Zinc	7440-66-6	0.18		
Silver	7440-22-4	Die Attach	0.733	0.175	7,332		Chromium	7440-47-3	0.25		
Acrylate resins Proprietary	Trade Secret	Die Attach	0.169	0.040	1,692		Total				100.00
Treated silica	Trade Secret	Die Attach	0.019	0.004	188	0.22 (mg) Total		Die Attach	% of Total Weight	0.94	
Heterocyclic organic compound	Trade Secret	Die Attach	0.019	0.004	188	8200T	Silver	7440-22-4	78		
Silicon	7440-21-3	Chip (Die)	3.610	0.859	36,100		Acrylate resins Proprietary	Trade Secret	18		
Gold	7440-57-5	Wire Bond	1.470	0.350	14,700		Treated silica	Trade Secret	2		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.140	0.747	31,400		Heterocyclic organic compound	Trade Secret	2		
TOTALS:						100.000	23.800	1,000,000			
0.0238 g Total Mass											
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>											
						0.86 Total (mg)		Chip (Die)	% of Total Weight	3.61	
						Doped Silicon		7440-21-3	100		
						Total		100.00			
						0.35 (mg) Total		Wire Bond	% of Total Weight	1.47	
						Gold		7440-57-5	100		
						Total		100.00			
						0.75 (mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.14	
						Tin		7440-31-5	100.00		
						Total		100.00			
						23.800				100.000	



Semiconductor Device Type: MD 08 (Lead) DFN 4x4 (M8)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	19.20	(mg) Total	Mold Compound	% of Total Weight	42.76	
Silica, fused	60676-86-0	Mold Compound	38.484	17.279	384,840	EM- G770HCD	Silica, fused	60676-86-0	90.00	42.76	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.074	0.931	20,739		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85		
Phenolic Resin	Trade Secret	Mold Compound	2.074	0.931	20,739		Phenolic Resin	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.128	0.058	1,283		Carbon Black	1333-86-4	0.30		
							Total				100.00
Copper	7440-50-8	Lead Frame	44.970	20.191	449,695	21.13	(mg) Total	Lead Frame	% of Total Weight	47.07	
Iron	7439-89-6	Lead Frame	1.106	0.497	11,061	194+AG	Copper	7440-50-8	95.54	47.07	
Silver	7440-22-4	Lead Frame	0.897	0.403	8,967		Iron	7439-89-6	2.35		
Zinc	7440-66-6	Lead Frame	0.059	0.026	588		Silver	7440-22-4	1.91		
Phosphorous	7723-14-0	Lead Frame	0.039	0.017	388		Zinc	7440-66-6	0.13		
Silver	7440-22-4	Die Attach	0.913	0.410	9,126		Phosphorous	7723-14-0	0.08		
Acrylate resins Proprietary	Trade Secret	Die Attach	0.211	0.095	2,106	Total			100.00		
Treated silica	Trade Secret	Die Attach	0.023	0.011	234	1.05	(mg) Total	Die Attach	% of Total Weight	1.17	
Heterocyclic organic compound	Trade Secret	Die Attach	0.023	0.011	234	8200T	Silver	7440-22-4	78	200.00	
Silicon	7440-21-3	Chip (Die)	5.470	2.456	54,700		Acrylate resins Proprietary	Trade Secret	18		
Gold	7440-57-5	Wire Bond	0.320	0.144	3,200		Treated silica	Trade Secret	2		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.210	1.441	32,100		Heterocyclic organic compound	Trade Secret	2		
			TOTALS:				101.170				45.425
0.0449 g Total Mass											
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 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 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 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.											
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						2.46	Total (mg)	Chip (Die)	% of Total Weight	5.47	
						Doped Silicon		7440-21-3	100		
						Total			100.00		
						0.14	(mg) Total	Wire Bond	% of Total Weight	0.32	
						Doped Gold		7440-57-5	100		
						Total			100.00		
						1.44	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.21	
						Tin		7440-31-5	100.00		
						Total			100.00		
						45.425				100.000	



Semiconductor Device Type: MF 8 (Lead) DFN-S 6x5 mm (A6 / AW)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	37.77 (mg) Total		Mold Compound	% of Total Weight	49.12	
Silica, fused	60676-86-0	Mold Compound	44.208	33.996	442,080	EME- G770HCD	Silica, fused	60676-86-0	90.00		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.382	1.832	23,823		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85		
Phenolic Resin	Trade Secret	Mold Compound	2.382	1.832	23,823			Phenolic Resin	Trade Secret		4.85
Carbon Black	1333-86-4	Mold Compound	0.147	0.113	1,474			Carbon Black	1333-86-4		0.30
								Total			100.00
Copper	7440-50-8	Lead Frame	42.960	33.036	429,600	33.91 (mg) Total		Lead Frame	% of Total Weight	44.1	
Tin	7440-31-5	Lead Frame	0.110	0.085	1,103	EFTEC64T + Ag	Copper	7440-50-8	97.42		
Silver	7440-22-4	Lead Frame	0.840	0.646	8,401		Tin	7440-31-5	0.25		
Zinc	7440-66-6	Lead Frame	0.079	0.061	794		Silver	7440-22-4	1.91		
Chromium	7440-47-3	Lead Frame	0.110	0.085	1,103		Zinc	7440-66-6	0.18		
Silver	7440-22-4	Die Attach	0.320	0.246	3,198		Chromium	7440-47-3	0.25		
Acrylate resins Proprietary	Trade Secret	Die Attach	0.074	0.057	738		Total		100.00		
Treated silica	Trade Secret	Die Attach	0.008	0.006	82	0.32 (mg) Total		Die Attach	% of Total Weight	0.41	
Heterocyclic organic compound	Trade Secret	Die Attach	0.008	0.006	82	8200T	Silver	7440-22-4	78		
Silicon	7440-21-3	Chip (Die)	2.870	2.207	28,700		Acrylate resins Proprietary	Trade Secret	18		
Gold	7440-57-5	Wire Bond	0.170	0.131	1,700		Treated silica	Trade Secret	2		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.330	2.561	33,300		Heterocyclic organic compound	Trade Secret	2		
TOTALS:			100.000	76.900	1,000,000	Total		100.00			
0.0769 g Total Mass											
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 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.											
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						2.21		Total (mg)	Chip (Die)	% of Total Weight	2.87
								Doped Silicon	7440-21-3	100	
								Total		100.00	
						0.13		(mg) Total	Wire Bond	% of Total Weight	0.17
								Doped Gold	7440-57-5	100	
								Total		100.00	
						2.56		(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.33
								Tin	7440-31-5	100.00	
								Total		100.00	
						76.900					100.000



Semiconductor Device Type: MF 10 (Lead) DFN 3x3 mm (E2 / E.J)			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		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	19.35	(mg) Total	Mold Compound	% of Total Weight		
Silica, fused	60676-86-0	Mold Compound	72.864	17.414	728,640	EME-G770HCD	Silica, fused	60676-86-0	90.00		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.927	0.938	39,266		Epoxy 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		
							Total			100.00	
Copper	7440-50-8	Lead Frame	3.544	0.847	35,444	194+AG	(mg) Total		Lead Frame	% of Total Weight	3.71
Iron	7439-89-6	Lead Frame	0.087	0.021	872		Copper	7440-50-8	95.54		
Silver	7440-22-4	Lead Frame	0.071	0.017	707		Iron	7439-89-6	2.35		
Zinc	7440-66-6	Lead Frame	0.005	0.001	46		Silver	7440-22-4	1.91		
Phosphorous	7723-14-0	Lead Frame	0.003	0.001	31		Zinc	7440-66-6	0.13		
Silver	7440-22-4	Die Attach	0.491	0.117	4,914	Phosphorous	7723-14-0	0.08	Total		100.00
Acrylate resins Proprietary	Trade Secret	Die Attach	0.113	0.027	1,134	(mg) Total		Die Attach	% of Total Weight	0.63	
Treated silica	Trade Secret	Die Attach	0.013	0.003	126						
Heterocyclic organic compound	Trade Secret	Die Attach	0.013	0.003	126						
Silicon	7440-21-3	Chip (Die)	9.260	2.213	92,600						
Gold	7440-57-5	Wire Bond	0.820	0.196	8,200						
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.620	1.104	46,200					8200T	
TOTALS:			100.000	23.900	1,000,000	(mg) Total		Die Attach	% of Total Weight		0.20
0.0239 g Total Mass											

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 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.

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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/offering/industries/chemicals/plastics/>

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19.35		(mg) Total	Mold Compound	% of Total Weight	80.96
EME-G770HCD	Silica, fused	60676-86-0	90.00		
	Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85		
	Phenolic Resin	Trade Secret	4.85		
	Carbon Black	1333-86-4	0.30		
	Total			100.00	
0.89	(mg) Total	Lead Frame	% of Total Weight	3.71	
194+AG	Copper	7440-50-8	95.54		
	Iron	7439-89-6	2.35		
	Silver	7440-22-4	1.91		
	Zinc	7440-66-6	0.13		
	Phosphorous	7723-14-0	0.08		
Total			100.00		
0.15	(mg) Total	Die Attach	% of Total Weight	0.63	
8200T	Silver	7440-22-4	78		
	Acrylate resins Proprietary	Trade Secret	18		
	Treated silica	Trade Secret	2		
	Heterocyclic organic compound	Trade Secret	2		
	Total			100.00	
2.21	Total (mg)	Chip (Die)	% of Total Weight	9.26	
	Silicon	7440-21-3	100		
Total			100.00		
0.20	(mg) Total	Wire Bond	% of Total Weight	0.82	
	Gold	7440-57-5	100		
Total			100.00		
1.10	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.62	
	Tin	7440-31-5	100.00		
Total			100.00		
23.900		Total		100.00	



Semiconductor Device Type: QAE 8 (Lead) TDFN-S 6x5x0.8mm (U3)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	38.82	(mg) Total	Mold Compound	% of 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		Epoxy 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		
						Total			100.00		
Copper	7440-50-8	Lead Frame	38.215	28.203	382,150	CDA194+Ag	29.52 (mg) Total		Lead Frame	% of Total Weight	40
Iron	7439-89-6	Lead Frame	0.940	0.694	9,400		Copper	7440-50-8	95.54		
Silver	7440-22-4	Lead Frame	0.762	0.562	7,620	Iron	7439-89-6	2.35			
Zinc	7440-66-6	Lead Frame	0.050	0.037	500	Silver	7440-22-4	1.91			
Phosphorous	7723-14-0	Lead Frame	0.033	0.024	330	Zinc	7440-66-6	0.13			
Silver (Ag)	7440-22-4	Die Attach	0.704	0.520	7,040	Phosphorous	7723-14-0	0.08			
Epoxy Resin	Trade Secret	Die Attach	0.150	0.110	1,496	Total			100.00		
Copper (Cu)	7440-50-8	Die Attach	0.026	0.019	264	0.65	(mg) Total	Die Attach	% of Total Weight	0.88	
Silicon	7440-21-3	Chip (Die)	5.140	3.793	51,400	8340	Silver (Ag)	7440-22-4	80		
Gold	7440-57-5	Wire Bond	0.270	0.199	2,700		Epoxy Resin	Trade Secret	17		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.110	0.819	11,100		Copper (Cu)	7440-50-8	3		
TOTALS:							100.000	73.800	1,000,000		
0.0738 g Total Mass						Total			100.00		
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						3.79 Total (mg)		Chip (Die)	% of Total Weight	5.14	
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		
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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/offersings/industries/chemicals/plastics/						0.20 (mg) Total		Wire Bond	% of Total Weight	0.27	
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.						Doped Gold		7440-57-5	100		
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						Total			100.00		
						73.800				100.000	



Semiconductor Device Type: Q2AE 08 (Lead) TDFN-S 6x8x0.8mm (S9)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	52.55	(mg) Total	Mold Compound	% of Total Weight	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		
							Total				100.00
Copper	7440-50-8	Lead Frame	47.490	67.199	474,904	CDA194+Ag	73.82 (mg) Total				
Silver	7440-22-4	Lead Frame	3.287	4.651	32,867		Copper	7440-50-8	91.03		
Iron	7439-89-6	Lead Frame	1.143	1.617	11,425		Silver	7440-22-4	6.30		
Zinc	7440-66-6	Lead Frame	0.177	0.251	1,774		Iron	7439-89-6	2.19		
Phosphorus	7723-14-0	Lead Frame	0.073	0.103	730		Zinc	7440-66-6	0.34		
Silver	7440-22-4	Die Attach	0.963	1.362	9,625	Phosphorus	7723-14-0	0.14	Total		
Acrylic Resin	Trade secret	Die Attach	0.106	0.150	1,063				100.00		
Polybutadiene derivative & copolymer	Trade secret	Die Attach	0.081	0.115	813	1.77 (mg) Total			EN4900G		
Acrylate	Trade secret	Die Attach	0.069	0.097	688	1.77 (mg) Total					
Epoxy Resin 2	Trade secret	Die Attach	0.031	0.044	313	1.77 (mg) Total					
Silicon	7440-21-3	Chip (Die)	7.800	11.037	78,000	1.77 (mg) Total					
Gold	7440-57-5	Wire Bond	0.040	0.057	400	1.77 (mg) Total					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.600	2.264	16,000	1.77 (mg) Total			1.25		
TOTALS:			100.000	141.500	1,000,000	Total			100.00		
0.1415 g Total Mass											
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
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						11.04	Total (mg)	Chip (Die)	% of Total Weight	7.8	
						Doped Silicon		7440-21-3	100		
						Total			100.00		
						0.06	(mg) Total	Wire Bond	% of Total Weight	0.04	
						Doped Gold		7440-57-5	100		
						Total			100.00		
						2.26	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.6	
						Tin		7440-31-5	100.00		
						Total			100.00		
						141.500				100.000	



Semiconductor Device Type: QAF 08 (Lead) TDFN-S 6x5x0.8 mm (9A)				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 e4
Basic Substance	CAS Number	Sub-Component	Weight	mg/part	ppm	38.79	(mg) Total	Mold Compound	% of Total Weight	51.17
Silica, vitreous (or fused)	60676-86-0	Mold Compound	43.495	32.969	434,945	G770HT	Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.452	3.374	44,518		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.070	2.327	30,702		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.154	0.116	1,535		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	37.675	28.557	376,746		Total 100.00			
Iron	7439-89-6	Lead Frame	0.891	0.675	8,906		29.35	(mg) Total	Lead Frame	
Phosphorous	7723-14-0	Lead Frame	0.097	0.073	968	C194 PPF- NiPdAu	Copper	7440-50-8	97.30	
Zinc (Metal)	7440-44-0	Lead Frame	0.058	0.044	581		Iron	7439-89-6	2.30	
Silver	7440-22-4	Die Attach	1.051	0.797	10,508		Phosphorous	7723-14-0	0.25	
Epoxy resin	Trade Secret	Die Attach	0.284	0.215	2,840		Zinc (Metal)	7440-44-0	0.15	
Metal oxide	Trade Secret	Die Attach	0.043	0.032	426		Total 100.00			
Gamma-butyrolactone	96-48-0	Die Attach	0.043	0.032	426		1.08	(mg) Total	Die Attach	
Silicon	7440-21-3	Chip (Die)	8.220	6.231	82,200	8290	Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.260	0.197	2,600		Epoxy resin	Trade Secret	20	
Nickel	7440-02-0	Plating on external leads (pins)	0.198	0.150	1,985		Metal oxide	Trade Secret	3	
Palladium	7440-05-03	Plating on external leads (pins)	0.011	0.008	105		Gamma-butyrolactone	96-48-0	3	
Gold	7440-57-5	Plating on external leads (pins)	0.001	0.001	11		Total 100.00			
TOTALS: 100.000 75.800 1,000,000							6.23	Total (mg)	Chip (Die)	
0.0758 g Total Mass								Doped Silicon	7440-21-3	100
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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						0.20	(mg) Total	Wire Bond	% of Total Weight	0.26
								Doped Gold	7440-57-5	100
								Total 100.00		
						0.16	(mg) Total	Plating on external leads (pins)	% of Total Weight	0.21
								Nickel	7440-02-0	94.50
								Palladium	7440-05-03	5.00
								Gold	7440-57-5	0.50
								Total 100.00		
						75.800				100.000



Semiconductor Device Type: MUY 08 (Lead) UDFN 2x3x0.5mm (6Q)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	61.155	4.831	611,550
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.296	0.260	32,956
Phenolic Resin	Trade Secret	Mold Compound	3.296	0.260	32,956
Carbon Black	1333-86-4	Mold Compound	0.204	0.016	2,039
Copper	7440-50-8	Lead Frame	20.779	1.642	207,786
Tin	7440-31-5	Lead Frame	0.053	0.004	533
Silver	7440-22-4	Lead Frame	0.406	0.032	4,063
Zinc	7440-66-6	Lead Frame	0.038	0.003	384
Chromium	7440-47-3	Lead Frame	0.053	0.004	533
Silver	7440-22-4	Die Attach	1.911	0.151	19,110
Acrylate resins Proprietary	Trade Secret	Die Attach	0.441	0.035	4,410
Treated silica	Trade Secret	Die Attach	0.049	0.004	490
Heterocyclic organic compound	Trade Secret	Die Attach	0.049	0.004	490
Silicon	7440-21-3	Chip (Die)	7.350	0.581	73,500
Gold	7440-57-5	Wire Bond	0.750	0.059	7,500
Nickel	7440-02-0	Plating on external leads (pins)	0.163	0.013	1,627
Palladium	7440-05-03	Plating on external leads (pins)	0.005	0.000	55
JGPSSI (D02) (Gold)	7440-57-5	Plating on external leads (pins)	0.002	0.000	18
TOTALS:			100.000	7.900	1,000,000

0.0079 g Total Mass

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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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 e4
5.37	(mg) Total	Mold Compound	% of Total Weight	67.95		
EME-G770HCD	Silica, fused	60676-86-0	90.00			
	Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85			
	Phenolic Resin	Trade Secret	4.85			
	Carbon Black	1333-86-4	0.30			
	Total			100.00		
1.69	(mg) Total	Lead Frame	% of Total Weight	21.33		
EFTEC64T + Ag	Copper	7440-50-8	97.42			
	Tin	7440-31-5	0.25			
	Silver	7440-22-4	1.91			
	Zinc	7440-66-6	0.18			
	Chromium	7440-47-3	0.25			
	Total			100.00		
0.19	(mg) Total	Die Attach	% of Total Weight	2.45		
8200T	Silver	7440-22-4	78			
	Acrylate resins Proprietary	Trade Secret	18			
	Treated silica	Trade Secret	2			
	Heterocyclic organic compound	Trade Secret	2			
	Total			100.00		
0.58	Total (mg)	Chip (Die)	% of Total Weight	7.35		
	Doped Silicon	7440-21-3	100			
Total			100.00			
0.06	(mg) Total	Wire Bond	% of Total Weight	0.75		
	Doped Gold	7440-57-5	100			
Total			100.00			
0.01	(mg) Total	Plating on external leads (pins)	% of Total Weight	0.17		
	Nickel	7440-02-0	95.73			
	Palladium	7440-05-03	3.23			
	Gold	7440-57-5	1.04			
Total			100.00			

7.90

100.00



Semiconductor Device Type: PH 144 (Lead) LQFP 20x20x1.4mm (H8)				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																																																																																																																																																																																																																																												
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Semiconductor Device Type: PQ 44 (Lead) MQFP (10x10x2mm) (T8)			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				
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm								
Silica, vitreous (or fused)	60676-86-0	Mold Compound	55.140	267.653	551.395	EME- G700	(mg) Total	Mold Compound	% of Total Weight	64.87			
Epoxy Resin	Trade Secret	Mold Compound	5.644	27.395	56.437						Silica, vitreous (or fused)	60676-86-0	85.00
Phenolic Resin	Trade Secret	Mold Compound	3.892	18.893	38.922						Epoxy Resin	Trade Secret	8.70
Carbon Black	1333-86-4	Mold Compound	0.195	0.945	1.946						Phenolic Resin	Trade Secret	6.00
Copper	7440-50-8	Lead Frame	27.106	131.573	271.056						Carbon Black	1333-86-4	0.30
Nickel	7440-02-0	Lead Frame	0.723	3.509	7.229	Total			100.00				
Silver	7440-22-4	Lead Frame	0.475	2.306	4.750	138.15	(mg) Total	Lead Frame	% of Total Weight	28.46			
Silicon	7440-21-3	Lead Frame	0.128	0.622	1.281	C7025	(mg) Total	Wire Bond	% of Total Weight	0.67			
Magnesium	7439-95-4	Lead Frame	0.028	0.138	0.285						Copper	7440-50-8	95.24
Silver (Ag)	7440-22-4	Die Attach	0.556	2.699	5.561						Nickel	7440-02-0	2.54
ANHYDRIDE	Trade Secret	Die Attach	0.060	0.293	0.603						Silver	7440-22-4	1.67
EPOXY RESIN	Trade Secret	Die Attach	0.054	0.260	0.536						Silicon	7440-21-3	0.45
Silicon	7440-21-3	Chip (Die)	3.970	19.271	39.700	Total			100.00				
Gold	7440-57-5	Wire Bond	0.210	1.019	2.100	3.25	(mg) Total	Die Attach	% of Total Weight	0.67			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.820	8.834	18.200	3230	(mg) Total	Wire Bond	% of Total Weight	0.21			
TOTALS: 100.000 485.410 1,000,000											Silver (Ag)	7440-22-4	83
0.4854 g Total Mass											ANHYDRIDE	Trade Secret	9
											EPOXY RESIN	Trade Secret	8
						Total			100.00				

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 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 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 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/offers/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 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.

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Semiconductor Device Type: PQ 44 (Lead) MQFP (10x10x2mm) (T8)			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				
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm								
TOTALS: 100.000 485.410 1,000,000						314.89	(mg) Total	Mold Compound	% of Total Weight	64.87			
0.4854 g Total Mass						EME- G700	(mg) Total	Mold Compound	% of Total Weight	64.87			
											Silica, vitreous (or fused)	60676-86-0	85.00
											Epoxy Resin	Trade Secret	8.70
											Phenolic Resin	Trade Secret	6.00
											Carbon Black	1333-86-4	0.30
						Total			100.00				
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											Copper	7440-50-8	95.24
											Nickel	7440-02-0	2.54
											Silver	7440-22-4	1.67
											Silicon	7440-21-3	0.45
						Total			100.00				
						3.25	(mg) Total	Die Attach	% of Total Weight	0.67			
						3230	(mg) Total	Wire Bond	% of Total Weight	0.21			
											Silver (Ag)	7440-22-4	83
											ANHYDRIDE	Trade Secret	9
											EPOXY RESIN	Trade Secret	8
						Total			100.00				
						19.27	Total (mg)	Chip (Die)	% of Total Weight	3.97			
						Doped Silicon			7440-21-3	100			
						Total			100.00				
						1.02	(mg) Total	Wire Bond	% of Total Weight	0.21			
						Doped Gold			7440-57-5	100			
						Total			100.00				
						8.83	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.82			
						Tin			7440-31-5	100.00			
						Total			100.00				
						485.410	Total			100.000			



Semiconductor Device Type: MS and UA 8 (Lead) MSOP 3x3mm (A3)			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		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	20.43	(mg) Total	Mold Compound	% of Total Weight	79.8	
Silica, vitreous	60676-86-0	Mold Compound	69.354	17.755	693,542	SG-8300GM	Silica, vitreous	60676-86-0	86.91	Total 100.00	
Epoxy Resin	Trade Secret	Mold Compound	6.121	1.567	61,207		Epoxy Resin	Trade Secret	7.67		
Phenolic Resin	Trade Secret	Mold Compound	4.078	1.044	40,778		Phenolic Resin	Trade Secret	5.11		
Carbon Black	1333-86-4	Mold Compound	0.247	0.063	2,474		Carbon Black	1333-86-4	0.31		
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314						
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	Total 100.00	
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	0.19	(mg) Total	Die Attach	% of Total Weight	0.75	
Modified Amine	827-43-0	Die Attach	0.026	0.007	263	8390A	Silver (Ag)	7440-22-4	75	Total 100.00	
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75,000		Modified Epoxy Resin	13561-08-5	14		
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.050	1,965		Diglycidylether of bisphenol-F	54208-63-8	8		
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.001	35		Modified Amine	827-43-0	4		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.320	12,500						
0.0256 g Total Mass			TOTALS:	100.000	25.600	1,000,000	1.92	Total (mg)	Chip (Die)	% of Total Weight	7.5
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>											
							0.05	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2
								Copper	7440-50-8	98	Total 100.00
								Palladium	7440-05-3	2	
							0.32	(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	100.00	Total 100.00
							25.600				100.000



Semiconductor Device Type: UN 10 (Lead) MSOP 3x3mm (E3 / EL)			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	
Basic Substance	CAS Number	"Contained in" Sub-Component	% Total Weight	mg/part	ppm					
Silica, vitreous	60676-86-0	Mold Compound	24.404	5.662	244,035	6.66 (mg) Total		Mold Compound	% of Total Weight	28.71
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	1.758	0.408	17,585	EME-G600		Silica, vitreous	60676-86-0	85.00
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	1.758	0.408	17,585			Epoxy Resin	Trade Secret	6.13
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.703	0.163	7,034			Phenolic Resin	Trade Secret	6.13
Carbon Black	1333-86-4	Mold Compound	0.086	0.020	861			Epoxy, Cresol Novolac	29690-82-2	2.45
Copper	7440-50-8	Lead Frame	42.830	9.937	428,299			Carbon Black	1333-86-4	0.30
Nickel	7440-02-0	Lead Frame	1.142	0.265	11,422	10.43 (mg) Total		Total		100.00
Silver	7440-22-4	Lead Frame	0.751	0.174	7,505	C7025				
Silicon	7440-21-3	Lead Frame	0.202	0.047	2,024			Copper	7440-50-8	95.24
Magnesium	7439-95-4	Lead Frame	0.045	0.010	450			Nickel	7440-02-0	2.54
Silver	7440-22-4	Die Attach	0.601	0.139	6,006			Silver	7440-22-4	1.67
Acrylate resins Proprietary	Trade Secret	Die Attach	0.139	0.032	1,386			Silicon	7440-21-3	0.45
Treated silica	Trade Secret	Die Attach	0.015	0.004	154			Magnesium	7439-95-4	0.10
Heterocyclic organic compound	Trade Secret	Die Attach	0.015	0.004	154	0.18 (mg) Total		Total		100.00
Silicon	7440-21-3	Chip (Die)	2.800	0.650	28,000	8200T				
Gold	7440-57-5	Wire Bond	0.680	0.158	6,800			Silver	7440-22-4	78
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	22.070	5.120	220,700			Acrylate resins Proprietary	Trade Secret	18
TOTALS:			100.000	23.200	1,000,000			Treated silica	Trade Secret	2
0.0232 g Total Mass							Heterocyclic organic compound		Trade Secret	2
							Total		100.00	

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 Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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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/offering/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.

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		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	
6.66	(mg) Total	Mold Compound	% of Total Weight			28.71	
EME-G600							
10.43 (mg) Total		Lead Frame	% of Total Weight			44.97	
C7025							
0.18 (mg) Total		Die Attach	% of Total Weight			0.77	
8200T							
0.65	Total (mg)	Chip (Die)	% of Total Weight			2.8	
		Doped Silicon	7440-21-3			100	
		Total				100.00	
0.16	(mg) Total	Wire Bond	% of Total Weight			0.68	
		Doped Gold	7440-57-5			100	
		Total				100.00	
5.12	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight			22.07	
		Tin	7440-31-5			100.00	
		Total				100.00	
23.200						100.000	



Semiconductor Device Type: P and PA 8 (Lead) PDIP (Small Outline - .300") (C4 / CK)			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight
Fused Silica	60676-86-0	Mold Compound	57.456
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778
Epoxy Resin	Trade Secret	Mold Compound	5.586
Phenol Resin	Trade Secret	Mold Compound	5.586
SiO2	14808-60-7	Mold Compound	1.995
Carbon Black	1333-86-4	Mold Compound	0.399
Copper	7440-50-8	Lead Frame	10.031
Iron	7439-89-6	Lead Frame	0.247
Silver	7440-22-4	Lead Frame	0.200
Zinc	7440-66-6	Lead Frame	0.013
Phosphorous	7723-14-0	Lead Frame	0.009
Silver	7440-22-4	Die Attach	0.550
Epoxy Resin	9003-36-5	Die Attach	0.110
Diluent	3101-60-8	Die Attach	0.055
Phenolic hardener	Trade secret	Die Attach	0.022
Amine type hardener	827-43-0	Die Attach	0.011
Dicyandiamide	461-58-5	Die Attach	0.002
Silicon	7440-21-3	Chip (Die)	7.500
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250
TOTALS:			100.000

0.4867 g Total Mass

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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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																							
			388.39	(mg) Total	Mold Compound	% of Total Weight	79.8																						
			<table border="1"> <tr> <td rowspan="6">GE800</td> <td>Fused Silica</td> <td>60676-86-0</td> <td>72.00</td> </tr> <tr> <td>Metal Hydro Oxide</td> <td>Trade Secret</td> <td>11.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>7.00</td> </tr> <tr> <td>Phenol Resin</td> <td>Trade Secret</td> <td>7.00</td> </tr> <tr> <td>SiO2</td> <td>14808-60-7</td> <td>2.50</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.50</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total</td> <td>100.00</td> </tr> </table>				GE800	Fused Silica	60676-86-0	72.00	Metal Hydro Oxide	Trade Secret	11.00	Epoxy Resin	Trade Secret	7.00	Phenol Resin	Trade Secret	7.00	SiO2	14808-60-7	2.50	Carbon Black	1333-86-4	0.50	Total			100.00
GE800	Fused Silica	60676-86-0	72.00																										
	Metal Hydro Oxide	Trade Secret	11.00																										
	Epoxy Resin	Trade Secret	7.00																										
	Phenol Resin	Trade Secret	7.00																										
	SiO2	14808-60-7	2.50																										
	Carbon Black	1333-86-4	0.50																										
Total			100.00																										
			51.10	(mg) Total	Lead Frame	% of Total Weight	10.5																						
			<table border="1"> <tr> <td rowspan="5">CDA194+Ag</td> <td>Copper</td> <td>7440-50-8</td> <td>95.54</td> </tr> <tr> <td>Iron</td> <td>7439-89-6</td> <td>2.35</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.91</td> </tr> <tr> <td>Zinc</td> <td>7440-66-6</td> <td>0.13</td> </tr> <tr> <td>Phosphorous</td> <td>7723-14-0</td> <td>0.08</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total</td> <td>100.00</td> </tr> </table>				CDA194+Ag	Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	Total			100.00			
CDA194+Ag	Copper	7440-50-8	95.54																										
	Iron	7439-89-6	2.35																										
	Silver	7440-22-4	1.91																										
	Zinc	7440-66-6	0.13																										
	Phosphorous	7723-14-0	0.08																										
Total			100.00																										
			3.65	(mg) Total	Die Attach	% of Total Weight	0.75																						
			<table border="1"> <tr> <td rowspan="6">CRM-1064L</td> <td>Silver</td> <td>7440-22-4</td> <td>73.36</td> </tr> <tr> <td>Epoxy Resin</td> <td>9003-36-5</td> <td>14.67</td> </tr> <tr> <td>Diluent</td> <td>3101-60-8</td> <td>7.33</td> </tr> <tr> <td>Phenolic hardener</td> <td>Trade secret</td> <td>2.93</td> </tr> <tr> <td>Amine type hardener</td> <td>827-43-0</td> <td>1.47</td> </tr> <tr> <td>Dicyandiamide</td> <td>461-58-5</td> <td>0.24</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total</td> <td>100.00</td> </tr> </table>				CRM-1064L	Silver	7440-22-4	73.36	Epoxy Resin	9003-36-5	14.67	Diluent	3101-60-8	7.33	Phenolic hardener	Trade secret	2.93	Amine type hardener	827-43-0	1.47	Dicyandiamide	461-58-5	0.24	Total			100.00
CRM-1064L	Silver	7440-22-4	73.36																										
	Epoxy Resin	9003-36-5	14.67																										
	Diluent	3101-60-8	7.33																										
	Phenolic hardener	Trade secret	2.93																										
	Amine type hardener	827-43-0	1.47																										
	Dicyandiamide	461-58-5	0.24																										
Total			100.00																										
			36.50	Total (mg)	Chip (Die)	% of Total Weight	7.5																						
			<table border="1"> <tr> <td>Doped Silicon</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total</td> <td>100.00</td> </tr> </table>				Doped Silicon	7440-21-3	100	Total			100.00																
Doped Silicon	7440-21-3	100																											
Total			100.00																										
			0.97	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2																						
			<table border="1"> <tr> <td>Copper</td> <td>7440-50-8</td> <td>98</td> </tr> <tr> <td>Palladium</td> <td>7440-05-3</td> <td>2</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total</td> <td>100.00</td> </tr> </table>				Copper	7440-50-8	98	Palladium	7440-05-3	2	Total			100.00													
Copper	7440-50-8	98																											
Palladium	7440-05-3	2																											
Total			100.00																										
			6.08	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25																						
			<table border="1"> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total</td> <td>100.00</td> </tr> </table>				Tin	7440-31-5	100.00	Total			100.00																
Tin	7440-31-5	100.00																											
Total			100.00																										
			486.700	Total			100.000																						



Semiconductor Device Type: P and PE 14 (Lead) PDIP (Small Outline - .300") (D2 / DF)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	Mold Compound	0.399	3.804	3,990		Carbon Black	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	10.031	95.630	100,314	Total			100.00	
Iron	7439-89-6	Lead Frame	0.247	2.352	2,468	100.10	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	1.907	2,000	194+AG	Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.125	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.083	87		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.563	5.362	5,625		Zinc	7440-66-6	0.13	
Diester Resin	94-80-4	Die Attach	0.113	1.072	1,125		Phosphorous	7723-14-0	0.08	
Functionalized Urethane Resin	72869-86-4	Die Attach	0.038	0.357	375		Total			
Epoxy Resin	9003-36-5	Die Attach	0.019	0.179	188	7.15	(mg) Total	Die Attach	% of Total Weight	0.75
Epoxy Resin	13561-08-5	Die Attach	0.019	0.179	188	2200D	Silver	7440-22-4	75	
Silicon	7440-21-3	Chip (Die)	7.500	71.498	75,000		Diester Resin	94-80-4	15	
Gold	7440-57-5	Wire Bond	0.200	1.907	2,000		Functionalized Urethane Resin	72869-86-4	5	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	11.916	12,500		Epoxy Resin	9003-36-5	3	
0.9533 g Total Mass			TOTALS:	100.000	953.300	1,000.000	Epoxy Resin	13561-08-5	3	
						Total			100.00	

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 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.

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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/>

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760.73	(mg) Total	Mold Compound	% of Total Weight	79.8
Total				
100.10	(mg) Total	Lead Frame	% of Total Weight	10.5
Total				
7.15	(mg) Total	Die Attach	% of Total Weight	0.75
Total				
71.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
Total				
1.91	(mg) Total	Wire Bond	% of Total Weight	0.2
Total				
11.92	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
Total				
953.300				100.000



Semiconductor Device Type: P and PE 16 (Lead) PDIP (Small Outline - .300") (D6 / DU)

Basic Substance	CAS Number	"Contained In" Sub-Component	Termination Base Alloy: Copper Alloy (Cu)		
			% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	57.205	636.503	572,050
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.122	45.866	41,221
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.122	45.866	41,221
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.649	18.346	16,489
Carbon Black	1333-86-4	Mold Compound	0.202	2.246	2,019
Copper	7440-50-8	Lead Frame	29.426	327.409	294,256
Iron	7439-89-6	Lead Frame	0.724	8.054	7,238
Silver	7440-22-4	Lead Frame	0.587	6.528	5,867
Zinc	7440-66-6	Lead Frame	0.039	0.428	385
Phosphorous	7723-14-0	Lead Frame	0.025	0.283	254
Silver	7440-22-4	Die Attach	0.052	0.576	518
Epoxy resin	Trade Secret	Die Attach	0.016	0.179	161
Gamma-butyrolactone	96-48-0	Die Attach	0.002	0.023	21
Silicon	7440-21-3	Chip (Die)	0.150	1.669	1,500
Gold	7440-57-5	Wire Bond	0.040	0.445	400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.640	18.248	16,400
TOTALS:			100.000	1,112.670	1,000,000

1.1127 g Total Mass

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
748.83	(mg) Total	Mold Compound	% of Total Weight	67.3
EME-G600	Silica, vitreous	60676-86-0	85.00	
	Epoxy Resin	Trade Secret	6.13	
	Phenolic Resin	Trade Secret	6.13	
	Epoxy, Cresol Novolac	29690-82-2	2.45	
	Carbon Black	1333-86-4	0.30	
	Total			
342.70	(mg) Total	Lead Frame	% of Total Weight	30.8
194+AG	Copper	7440-50-8	95.54	
	Iron	7439-89-6	2.35	
	Silver	7440-22-4	1.91	
	Zinc	7440-66-6	0.13	
	Phosphorous	7723-14-0	0.08	
	Total			
0.78	(mg) Total	Die Attach	% of Total Weight	0.07
8361J	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	23	
	Gamma-butyrolactone	96-48-0	3	
Total			100.00	
1.67	Total (mg)	Chip (Die)	% of Total Weight	0.15
		Doped Silicon	7440-21-3	100
Total			100.00	
0.45	(mg) Total	Wire Bond	% of Total Weight	0.04
		Doped Gold	7440-57-5	100
Total			100.00	
18.25	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.64
		Tin	7440-31-5	100.00
Total			100.00	
1,112.670			100.000	



Semiconductor Device Type: P 18 (Lead) PDIP .300" (F3 / FP)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Fused Silica	60676-86-0	Mold Compound	57.456	717.051	574,560				995.90 (mg) Total Mold Compound % of Total Weight 79.8	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	109.549	87,780					
Epoxy Resin	Trade Secret	Mold Compound	5.586	69.713	55,860					
Phenol Resin	Trade Secret	Mold Compound	5.586	69.713	55,860					
SiO2	14808-60-7	Mold Compound	1.995	24.898	19,950					
Carbon Black	1333-86-4	Mold Compound	0.399	4.980	3,990					
Copper	7440-50-8	Lead Frame	10.031	125.192	100,314					
Iron	7439-89-6	Lead Frame	0.247	3.079	2,468					
Silver	7440-22-4	Lead Frame	0.200	2.496	2,000					
Zinc	7440-66-6	Lead Frame	0.013	0.164	131					
Phosphorous	7723-14-0	Lead Frame	0.009	0.108	87					
Silver	7440-22-4	Die Attach	0.554	6.908	5,535					
Epoxy Resin	9003-36-5	Die Attach	0.141	1.760	1,410					
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.047	0.590	473					
Phenolic hardener	92-88-6	Die Attach	0.002	0.028	23					
Butyl cellosolve acetate	112-07-2	Die Attach	0.006	0.075	60					
Silicon	7440-21-3	Chip (Die)	7.500	93.600	75,000					
Gold	7440-57-5	Wire Bond	0.200	2.496	2,000					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	15.600	12,500					
TOTALS:			100.000	1,248.000	1,000,000					

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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995.90	(mg) Total	Mold Compound	% of Total Weight	79.8
EME-GE800	Fused Silica	60676-86-0	72.00	
	Metal Hydro Oxide	Trade Secret	11.00	
	Epoxy Resin	Trade Secret	7.00	
	Phenol Resin	Trade Secret	7.00	
	SiO2	14808-60-7	2.50	
	Carbon Black	1333-86-4	0.50	
	Total			
131.04	(mg) Total	Lead Frame	% of Total Weight	10.5
194+AG	Copper	7440-50-8	95.54	
	Iron	7439-89-6	2.35	
	Silver	7440-22-4	1.91	
	Zinc	7440-66-6	0.13	
	Phosphorous	7723-14-0	0.08	
	Total			
9.36	(mg) Total	Die Attach	% of Total Weight	0.75
CRM-1064L	Silver	7440-22-4	74	
	Epoxy Resin	9003-36-5	19	
	t-Butyl phenyl glycidyl ether	3101-60-8	6	
	Phenolic hardener	92-88-6	0	
	Butyl cellosolve acetate	112-07-2	1	
Total			100.00	
93.60	Total (mg)	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
Total			100.00	
2.50	(mg) Total	Wire Bond	% of Total Weight	0.2
	Gold	7440-57-5	100	
Total			100.00	
15.60	(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	100.00	
Total			100.00	
1,248.000				100.000



Semiconductor Device Type: P 20 (Lead) PDIP .300" (G6 / GV)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1045.39	(mg) Total	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		Carbon Black	1333-86-4	0.50		
						Total			100.00		
Copper	7440-50-8	Lead Frame	27.687	418.865	276.868	194+AG	(mg) Total		Lead Frame	% of Total Weight	28.98
Iron	7439-89-6	Lead Frame	0.681	10.303	6.810		Copper	7440-50-8	95.54		
Silver	7440-22-4	Lead Frame	0.552	8.352	5.521		Iron	7439-89-6	2.35		
Zinc	7440-66-6	Lead Frame	0.036	0.548	362		Silver	7440-22-4	1.91		
Phosphorous	7723-14-0	Lead Frame	0.024	0.362	239		Zinc	7440-66-6	0.13		
Silver (Ag)	7440-22-4	Die Attach	0.068	1.021	675		Phosphorous	7723-14-0	0.08		
Modified Epoxy Resin	13561-08-5	Die Attach	0.013	0.191	126			Total	100.00		
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.007	0.102	68	1.36		(mg) Total	Die Attach	% of Total Weight	0.09
Modified Amine	827-43-0	Die Attach	0.003	0.048	32						
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		Diglycidylether of bisphenol	54208-63-8	8		
									Modified Amine		827-43-0
1.5129 g Total Mass						TOTALS:			100.000	1,512.870	1,000.000
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/offering/industries/chemicals/plastics/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>											
						4.54	Total (mg)	Chip (Die)	% of Total Weight	0.3	
						Doped Silicon		7440-21-3	100	Total 100.00	
						0.30	(mg) Total	Wire Bond	% of Total Weight	0.02	
						Doped Gold		7440-57-5	100	Total 100.00	
						22.84	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.51	
						Tin		7440-31-5	100.00	Total 100.00	
						1,512.870				100.000	



Semiconductor Device Type: PG 24 (Lead) PDIP Wide Outline - .600" (J4 / JT)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1267.01	(mg) Total	Mold Compound	% of 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	
							Total		100.00	
Copper	7440-50-8	Lead Frame	27.830	515.060	278,301	194+AG	539.12 (mg) Total Lead Frame % of Total Weight 29.13			
Iron	7439-89-6	Lead Frame	0.685	12.669	6,846		Copper	7440-50-8	95.54	
Silver	7440-22-4	Lead Frame	0.555	10.270	5,549		Iron	7439-89-6	2.35	
Zinc	7440-66-6	Lead Frame	0.036	0.674	364		Silver	7440-22-4	1.91	
Phosphorous	7723-14-0	Lead Frame	0.024	0.445	240		Zinc	7440-66-6	0.13	
							Phosphorous	7723-14-0	0.08	
						Total		100.00		
Epoxy resin	Trade Secret	Die Attach	0.032	0.596	322	8361J	2.59 (mg) Total Die Attach % of Total Weight 0.14			
Gamma-butyrolactone	96-48-0	Die Attach	0.004	0.078	42		Silver	7440-22-4	74	
Silicon	7440-21-3	Chip (Die)	0.750	13.880	7,500		Epoxy resin	Trade Secret	23	
Gold	7440-57-5	Wire Bond	0.030	0.555	300		Gamma-butyrolactone	96-48-0	3	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.490	27.576	14,900		Total		100.00	
TOTALS: 100.000 1,850.730 1,000,000										
1.8507 g Total Mass										
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>										
						13.88	Total (mg)	Chip (Die)	% of Total Weight	0.75
							Doped Silicon	7440-21-3	100	
							Total		100.00	
						0.56	(mg) Total	Wire Bond	% of Total Weight	0.03
							Doped Gold	7440-57-5	100	
							Total		100.00	
						27.58	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.49
							Tin	7440-31-5	100.00	
							Total		100.00	
						1,850.730				100.000



Semiconductor Device Type: P and PI 28 (Lead) PDIP (Wide Outline -.600") (Q2 / QB)				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		
Basic Substance				CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	3245.23 (mg) Total	Mold Compound	% of Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	2336.563	574.560	EME-GE800	Fused Silica	60676-86-0	72.00			
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	356.975	87.780		Metal Hydro Oxide	Trade Secret	11.00			
Epoxy Resin	Trade Secret	Mold Compound	5.586	227.166	55.860		Epoxy Resin	Trade Secret	7.00			
Phenol Resin	Trade Secret	Mold Compound	5.586	227.166	55.860		Phenol Resin	Trade Secret	7.00			
SiO2	14808-60-7	Mold Compound	1.995	81.131	19.950		SiO2	14808-60-7	2.50			
Carbon Black	1333-86-4	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							
Iron	7439-89-6	Lead Frame	0.246	9.987	2.456							
Silver	7440-22-4	Lead Frame	0.199	8.096	1.991							
Zinc	7440-66-6	Lead Frame	0.013	0.531	131							
Phosphorous	7723-14-0	Lead Frame	0.009	0.351	86							
Polyimide	25038-81-7	Lead Frame	0.022	0.874	215							
Poly - ethylene - terephthalate	25038-59-9	Lead Frame	0.019	0.773	190							
NBR	9003-18-3	Lead Frame	0.004	0.142	35							
Bismaleimide	79922-55-7	Lead Frame	0.003	0.122	30							
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.122	30							
Silver	7440-22-4	Die Attach	0.550	22.375	5.502							
Epoxy Resin	9003-36-5	Die Attach	0.110	4.474	1,100							
Diluent	3101-60-8	Die Attach	0.055	2.236	550							
Phenolic hardener	Trade secret	Die Attach	0.022	0.894	220							
Amine type hardener	827-43-0	Die Attach	0.011	0.448	110							
Dicyandiamide	461-58-5	Die Attach	0.002	0.073	18							
Silicon	7440-21-3	Chip (Die)	7.500	305.003	75,000							
Gold	7440-57-5	Wire Bond	0.200	8.133	2,000							
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	50.834	12,500							
			TOTALS:	100.000	4,066.700	1,000,000						
4.0667 g Total Mass												
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 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.												
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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.												
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				424.97 (mg) Total	Lead Frame	% of Total Weight				10.45		
				194+AG	Copper	7440-50-8	95.54					
					Iron	7439-89-6	2.35					
					Silver	7440-22-4	1.91					
					Zinc	7440-66-6	0.13					
					Phosphorous	7723-14-0	0.08					
				Total	100.00							
				2.03 (mg) Total	Lead Lock Tape	% of Total Weight				0.05		
				Lead Tape	Polyimide	25038-81-7	43.00					
					Poly - ethylene - terephthalate	25038-59-9	38.00					
					NBR	9003-18-3	7.00					
					Bismaleimide	79922-55-7	6.00					
					Phenol resin	28453-20-5 / 9016-83-5	6.00					
				Total	100.00							
				30.50 (mg) Total	Die Attach	% of Total Weight				0.75		
				CRM-1064L	Silver	7440-22-4	73					
					Epoxy Resin	9003-36-5	15					
					Diluent	3101-60-8	7					
					Phenolic hardener	Trade secret	3					
					Amine type hardener	827-43-0	1					
					Dicyandiamide	461-58-5	0					
				Total	100.00							
				305.00 Total (mg)	Chip (Die)	% of Total Weight				7.5		
					Doped Silicon	7440-21-3	100					
				Total	100.00							
				8.13 (mg) Total	Wire Bond	% of Total Weight				0.2		
					Doped Gold	7440-57-5	100					
				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		
					7440-31-5	100.00						
				Total	100.00							
				4,064.667				100.000				



Semiconductor Device Type: P and PL 40 (Lead) PDIP (Wide Outline - .600") (S2 / SL)			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			
Basic Substance	CAS Number	Contained In Sub-Component	% Total Weight	mg/part	ppm	5187.00	(mg) Total	Mold Compound	% of 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	Total 100.00		
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	570.570	87.780		Metal Hydro Oxide	Trade Secret	11.00			
Epoxy Resin	Trade Secret	Mold Compound	5.586	363.090	55.860		Epoxy Resin	Trade Secret	7.00			
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	
Zinc	7440-66-6	Lead Frame	0.013	0.849	1.31			Iron	7439-89-6		2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.560	86	Silver		7440-22-4	1.91			
Polyimide	25038-81-7	Lead Frame	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			
Epoxy Resin	9003-36-5	Die Attach	0.110	7.152	1.100		NBR	9003-18-3	7.00			
Diluent	3101-60-8	Die Attach	0.055	3.573	550		Bismaleimide	79922-55-7	6.00			
Phenolic hardener	Trade secret	Die Attach	0.022	1.428	220		Phenol resin	28453-20-5 / 9016-83-5	6.00			
Amine type hardener	827-43-0	Die Attach	0.011	0.717	110	Total			100.00			
Dicyandiamide	461-58-5	Die Attach	0.002	0.117	18	48.75	(mg) Total	Die Attach	% of Total Weight	0.75		
Silicon	7440-21-3	Chip (Die)	7.500	487.500	75.000	CRM-1064L	Silver	7440-22-4	73			
Gold	7440-57-5	Wire Bond	0.200	13.000	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	81.250	12.500		Diluent	3101-60-8	7			
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 materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).												
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						487.50	Total (mg)	Chip (Die)	% of Total Weight	7.5		
							Doped Silicon	7440-21-3	100			
						Total		100.00				
						13.00	(mg) Total	Wire Bond	% of Total Weight	0.2		
							Doped Gold	7440-57-5	100			
						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		
							Tin	7440-31-5	100.00			
						Total		100.00				
						6,496.750	Total		100.000			



Semiconductor Device Type: SP 28 (Lead) SPDIP .300" (M3 / MD)			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				
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm								
Fused Silica	60676-86-0	Mold Compound	57.456	1199.394	574,560	1665.83	(mg) Total	Mold Compound	% of Total Weight	79.8			
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	183.241	87,780	EME-GE800	Fused Silica	60676-86-0	72.00				
Epoxy Resin	Trade Secret	Mold Compound	5.586	116.608	55,860		Metal Hydro Oxide	Trade Secret	11.00				
Phenol Resin	Trade Secret	Mold Compound	5.586	116.608	55,860		Epoxy Resin	Trade Secret	7.00				
SiO2	14808-60-7	Mold Compound	1.995	41.646	19,950		Phenol Resin	Trade Secret	7.00				
Carbon Black	1333-86-4	Mold Compound	0.399	8.329	3,990		SiO2	14808-60-7	2.50				
Copper	7440-50-8	Lead Frame	9.984	208.409	99,837		Carbon Black	1333-86-4	0.50				
Iron	7439-89-6	Lead Frame	0.246	5.126	2,456		Total 100.00						
Silver	7440-22-4	Lead Frame	0.199	4.156	1,991	218.14	(mg) Total	Lead Frame	% of Total Weight	10.45			
Zinc	7440-66-6	Lead Frame	0.013	0.273	131	1944*AG	Copper	7440-50-8	95.54				
Phosphorous	7723-14-0	Lead Frame	0.009	0.180	86		Iron	7439-89-6	2.35				
Polyimide	25038-81-7	Lead Frame	0.022	0.449	215		Silver	7440-22-4	1.91				
Poly - ethylene - terephthalate	25038-59-9	Lead Frame	0.019	0.397	190		Zinc	7440-66-6	0.13				
NBR	9003-18-3	Lead Frame	0.004	0.073	35		Phosphorous	7723-14-0	0.08				
Bismaleimide	79922-55-7	Lead Frame	0.003	0.063	30	Total 100.00							
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.063	30	1.04	(mg) Total	Lead Lock Tape	% of Total Weight	0.05			
Silver	7440-22-4	Die Attach	0.550	11.485	5,502	Lead Tape	Polyimide	25038-81-7	43.00				
Epoxy Resin	9003-36-5	Die Attach	0.110	2.297	1,100		Poly - ethylene - terephthalate	25038-59-9	38.00				
Diluent	3101-60-8	Die Attach	0.055	1.148	550		NBR	9003-18-3	7.00				
Phenolic hardener	Trade secret	Die Attach	0.022	0.459	220		Bismaleimide	79922-55-7	6.00				
Amine type hardener	827-43-0	Die Attach	0.011	0.230	110		Phenol resin	28453-20-5 / 9016-83-5	6.00				
Dicyandiamide	461-58-5	Die Attach	0.002	0.038	18	Total 100.00							
Silicon	7440-21-3	Chip (Die)	7.500	156.563	75,000	15.66	(mg) Total	Die Attach	% of Total Weight	0.75			
Gold	7440-57-5	Wire Bond	0.200	4.175	2,000	CRM-1064L	Silver	7440-22-4	73				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	26.094	12,500		Epoxy Resin	9003-36-5	15				
2.0875 g Total Mass			TOTALS:	100.000	2,087.500		1,000.000	Diluent	3101-60-8		7		
											Phenolic hardener	Trade secret	3
											Amine type hardener	827-43-0	1
									Dicyandiamide	461-58-5	0		
									Total 100.00				

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 Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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1665.83	(mg) Total	Mold Compound	% of Total Weight	79.8
EME-GE800	Fused Silica	60676-86-0	72.00	
	Metal Hydro Oxide	Trade Secret	11.00	
	Epoxy Resin	Trade Secret	7.00	
	Phenol Resin	Trade Secret	7.00	
	SiO2	14808-60-7	2.50	
	Carbon Black	1333-86-4	0.50	
Total			100.00	
218.14	(mg) Total	Lead Frame	% of Total Weight	10.45
1944*AG	Copper	7440-50-8	95.54	
	Iron	7439-89-6	2.35	
	Silver	7440-22-4	1.91	
	Zinc	7440-66-6	0.13	
	Phosphorous	7723-14-0	0.08	
Total			100.00	
1.04	(mg) Total	Lead Lock Tape	% of Total Weight	0.05
Lead Tape	Polyimide	25038-81-7	43.00	
	Poly - ethylene - terephthalate	25038-59-9	38.00	
	NBR	9003-18-3	7.00	
	Bismaleimide	79922-55-7	6.00	
	Phenol resin	28453-20-5 / 9016-83-5	6.00	
Total			100.00	
15.66	(mg) Total	Die Attach	% of Total Weight	0.75
CRM-1064L	Silver	7440-22-4	73	
	Epoxy Resin	9003-36-5	15	
	Diluent	3101-60-8	7	
	Phenolic hardener	Trade secret	3	
	Amine type hardener	827-43-0	1	
	Dicyandiamide	461-58-5	0	
Total			100.00	
156.56	Total (mg)	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
Total			100.00	
4.18	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
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	100.00	
Total			100.00	
2,086.456				100.000



Semiconductor Device Type: L 28 (Lead) PLCC (L4)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	818.39	(mg) Total	Mold Compound	% of Total Weight	71.63
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)	Trade Secret	Mold Compound	4.387	50.127	43.873		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.755	20.051	17.549		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.215	2.455	2.149		Carbon Black	1333-86-4	0.30	
							Total		100.00	
Copper	7440-50-8	Lead Frame	25.115	286.945	251,148	292.83	(mg) Total	Lead Frame	% of Total Weight	25.63
Silver	7440-22-4	Lead Frame	0.488	5.578	4.883	CDA151 + Aq				
Zirconium	7440-67-7	Lead Frame	0.026	0.293	256		Copper	7440-50-8	97.99	
Manganese	7439-96-5	Lead Frame	0.001	0.015	13		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.163	1.860	1,628		Zirconium	7440-67-7	0.10	
Epoxy resin	Trade Secret	Die Attach	0.051	0.578	506		Manganese	7439-96-5	0.01	
							Total		100.00	
Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.075	66	2.51	(mg) Total	Die Attach	% of Total Weight	0.22
Silicon	7440-21-3	Chip (Die)	1.210	13.825	12,100	8361J	Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.070	0.800	700		Epoxy resin	Trade Secret	23	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.240	14.167	12,400		Gamma-butyrolactone	96-48-0	3	
TOTALS:			100.000	1,142.530	1,000,000	Total		100.00		
1.1425 g Total Mass										
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 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.										
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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.										
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						13.82	Total (mg)	Chip (Die)	% of Total Weight	1.21
							Doped Silicon	7440-21-3	100	
						Total		100.00		
						0.80	(mg) Total	Wire Bond	% of Total Weight	0.07
							Doped Gold	7440-57-5	100	
						Total		100.00		
						14.17	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.24
							Tin	7440-31-5	100.00	
						Total		100.00		
						1,142.530				100.000



Semiconductor Device Type: NHE 32 (Lead) PLCC (P3)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	677.40	(mg) Total	Mold Compound	% of Total Weight	60	
Silica, vitreous	60676-86-0	Mold Compound	51.000	575.790	510,000	EME-G600	Silica, vitreous	60676-86-0	85.00	Total 100.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	41.491	36,750		Epoxy Resin	Trade Secret	6.13		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	41.491	36,750		Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.470	16.596	14,700		Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.180	2.032	1,800		Carbon Black	1333-86-4	0.30		
Copper (Cu)	7440-50-8	Lead Frame	29.760	335.990	297,600		Total				100.00
Nickle (Ni)	7440-02-0	Lead Frame	1.280	14.451	12,800	361.28	(mg) Total	Lead Frame	% of Total Weight	32	
Silicon (Si)	7440-21-3	Lead Frame	0.320	3.613	3,200	CDA151 + Ag	Copper (Cu)	7440-50-8	93.00	Total 100.00	
Magnesium (Mg)	7439-95-4	Lead Frame	0.064	0.723	640		Nickle (Ni)	7440-02-0	4.00		
Silver (Ag)	7440-22-4	Lead Frame	0.576	6.503	5,760		Silicon (Si)	7440-21-3	1.00		
Silver (Ag)	7440-22-4	Die Attach	0.064	0.723	640		Magnesium (Mg)	7439-95-4	0.20		
Epoxy Resin	Trade Secret	Die Attach	0.014	0.154	136		Silver (Ag)	7440-22-4	1.80		
Copper (Cu)	7440-50-8	Die Attach	0.002	0.027	24		Total				100.00
Silicon	7440-21-3	Chip (Die)	4.820	54.418	48,200	0.90	(mg) Total	Die Attach	% of Total Weight	0.08	
Gold	7440-57-5	Wire Bond	0.100	1.129	1,000	8340	Silver (Ag)	7440-22-4	80	Total 100.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	33.870	30,000		Epoxy Resin	Trade Secret	17		
TOTALS:			100.000	1,129.000	1,000,000		Copper (Cu)	7440-50-8	3		
1.1290 g Total Mass						54.42	Total (mg)	Chip (Die)	% of Total Weight	4.82	
						Doped Silicon		7440-21-3	100	Total 100.00	
						1.13	(mg) Total	Wire Bond	% of Total Weight	0.1	
						Doped Gold		7440-57-5	100	Total 100.00	
						33.87	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3	
						Tin		7440-31-5	100.00	Total 100.00	
						1,129.000	Total			100.00	100.000

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: L & NJE 44 (Lead) PLCC (T2 / TC)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous	60676-86-0	Mold Compound
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound
Epoxy, Cresol Novolac	29690-82-2	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Silver	7440-22-4	Lead Frame
Zirconium	7440-67-7	Lead Frame
Manganese	7439-96-5	Lead Frame
Silver	7440-22-4	Die Attach
Epoxy resin	Trade Secret	Die Attach
Gamma-butyrolactone	96-48-0	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
2.3755 g Total Mass		

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
64.685	1536.618	646,850
4.661	110.727	46,611
4.661	110.727	46,611
1.864	44.291	18,645
0.228	5.423	2,283
21.460	509.786	214,598
0.417	9.911	4,172
0.022	0.520	219
0.001	0.026	11
0.104	2.461	1,036
0.032	0.765	322
0.004	0.100	42
0.870	20.667	8,700
0.050	1.188	500
0.940	22.330	9,400
TOTALS: 100.000 2,375.540 1,000,000		

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
(mg) Total	Mold Compound	% of Total Weight	
1807.79			76.1
EME-G600			
Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	0.30	
Total			100.00
520.24			21.9
CDA151+AG			
Copper	7440-50-8	97.99	
Silver	7440-22-4	1.91	
Zirconium	7440-67-7	0.10	
Manganese	7439-96-5	0.01	
Total			100.00
3.33			0.14
8361J			
Silver	7440-22-4	74	
Epoxy resin	Trade Secret	23	
Gamma-butyrolactone	96-48-0	3	
Total			100.00
20.67			0.87
Total (mg)			
Doped Silicon	7440-21-3	100	
Total			100.00
1.19			0.05
(mg) Total			
Doped Gold	7440-57-5	100	
Total			100.00
22.33			0.94
(mg) Total			
Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			
Tin	7440-31-5	100.00	
Total			100.00
2,375.540			100.000

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Semiconductor Device Type: L 68 (Lead) PLCC (W2 / WF)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous	60676-86-0	Mold Compound
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound
Epoxy, Cresol Novolac	29690-82-2	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Silver	7440-22-4	Lead Frame
Zirconium	7440-67-7	Lead Frame
Manganese	7439-96-5	Lead Frame
Silver	7440-22-4	Die Attach
Diester Resin	94-80-4	Die Attach
Functionalized Urethane Resin	72869-86-4	Die Attach
Epoxy Resin	9003-36-5	Die Attach
Epoxy Resin	13561-08-5	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
TOTALS:		

4.8800 g Total Mass

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
24.038	1173.054	240,380
1.732	84.529	17,322
1.732	84.529	17,322
0.693	33.812	6,929
0.085	4.140	848
22.087	1077.843	220,869
0.429	20.954	4,294
0.023	1.100	225
0.001	0.055	11
9.983	487.146	99,825
1.997	97.429	19,965
0.666	32.476	6,655
0.333	16.238	3,328
0.333	16.238	3,328
12.310	600.728	123,100
5.120	249.856	51,200
18.440	899.872	184,400
100.000	4,880.000	1,000,000

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
(mg) Total	Mold Compound	% of Total Weight	
1380.06			28.28
EME-G600			
Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	0.30	
Total			100.00
1099.95			22.54
CDA151+AG			
Copper	7440-50-8	97.99	
Silver	7440-22-4	1.91	
Zirconium	7440-67-7	0.10	
Manganese	7439-96-5	0.01	
Total			100.00
649.53			13.31
2200D			
Silver	7440-22-4	75	
Diester Resin	94-80-4	15	
Functionalized Urethane Resin	72869-86-4	5	
Epoxy Resin	9003-36-5	3	
Epoxy Resin	13561-08-5	3	
Total			100.00
600.73			12.31
Total (mg)	Chip (Die)	% of Total Weight	
Doped Silicon	7440-21-3	100	
Total			100.00
249.86			5.12
(mg) Total	Wire Bond	% of Total Weight	
Doped Gold	7440-57-5	100	
Total			100.00
899.87			18.44
(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	
Tin	7440-31-5	100.00	
Total			100.00
4,880.000			100.000

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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)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	13.79	(mg) Total	Mold Compound	% of Total Weight	63.82	
Silica, fused	60676-86-0	Mold Compound	57.438	12.407	574,380	EME- G770HCD	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.095	0.669	30,953			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	
						Total			100.00		
Copper	7440-50-8	Lead Frame	22.289	4.814	222,889	5.04	(mg) Total	Lead Frame	% of Total Weight	23.33	
Iron	7439-89-6	Lead Frame	0.548	0.118	5,483	194+AG	Copper	7440-50-8	95.54		
Silver	7440-22-4	Lead Frame	0.444	0.096	4,444		Iron	7439-89-6	2.35		
Zinc	7440-66-6	Lead Frame	0.029	0.006	292		Silver	7440-22-4	1.91		
Phosphorous	7723-14-0	Lead Frame	0.019	0.004	192		Zinc	7440-66-6	0.13		
Silver	7440-22-4	Die Attach	0.273	0.059	2,730		Phosphorous	7723-14-0	0.08		
Acrylate resins Proprietary	Trade Secret	Die Attach	0.063	0.014	630		Total			100.00	
Treated silica	Trade Secret	Die Attach	0.007	0.002	70	0.08	(mg) Total	Die Attach	% of Total Weight	0.35	
Heterocyclic organic compound	Trade Secret	Die Attach	0.007	0.002	70	8200T	Silver	7440-22-4	78		
Silicon	7440-21-3	Chip (Die)	5.350	1.156	53,500		Acrylate resins Proprietary	Trade Secret	18		
Gold	7440-57-5	Wire Bond	1.840	0.397	18,400		Treated silica	Trade Secret	2		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	5.310	1.147	53,100		Heterocyclic organic compound	Trade Secret	2		
TOTALS:						100.000				100.000	
0.0216 g Total Mass											
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						1.16	Total (mg)	Chip (Die)	% of Total Weight	5.35	
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		
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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/						0.40	(mg) Total	Wire Bond	% of Total Weight	1.84	
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.						Doped Gold		7440-57-5	100		
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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.						1.15	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	5.31	
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		
						Total			100.00		
						21.600				100.000	



Semiconductor Device Type: ML 16 (Lead) QFN 4x4mm (D5 / DS)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	19.49 EME- G77HCD	(mg) Total	Mold Compound	% of Total Weight	46.75	
Silica, fused	60676-86-0	Mold Compound	42.075	17.545	420,750	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.267	0.945	22,674		Trade Secret		4.85		
Phenolic Resin	Trade Secret	Mold Compound	2.267	0.945	22,674		Phenolic Resin	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.140	0.058	1,403		Carbon Black	1333-86-4	0.30		
							Total				100.00
Copper	7440-50-8	Lead Frame	38.511	16.059	385,112	16.81	(mg) Total	Lead Frame	% of Total Weight	40.31	
Iron	7439-89-6	Lead Frame	0.947	0.395	9,473	194+AG	Copper	7440-50-8	95.54		
Silver	7440-22-4	Lead Frame	0.768	0.320	7,679		Iron	7439-89-6	2.35		
Zinc	7440-66-6	Lead Frame	0.050	0.021	504		Silver	7440-22-4	1.91		
Phosphorous	7723-14-0	Lead Frame	0.033	0.014	333		Zinc	7440-66-6	0.13		
							Total				100.00
Silver	7440-22-4	Die Attach	1.022	0.426	10,218	0.55	(mg) Total	Die Attach	% of Total Weight	1.31	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.236	0.098	2,358	8200T	Silver	7440-22-4	78		
Treated silica	Trade Secret	Die Attach	0.026	0.011	262		Acrylate resins Proprietary	Trade Secret	18		
Heterocyclic organic compound	Trade Secret	Die Attach	0.026	0.011	262		Treated silica	Trade Secret	2		
Silicon	7440-21-3	Chip (Die)	7.890	3.290	78,900		Heterocyclic organic compound	Trade Secret	2		
							Total				100.00
Gold	7440-57-5	Wire Bond	0.790	0.329	7,900	3.29	Total (mg)	Chip (Die)	% of Total Weight	7.89	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	1.230	29,500				7440-21-3	100	
									Total		100.00
0.0417 g Total Mass											
						0.33	(mg) Total	Wire Bond	% of Total Weight	0.79	
									JGPSSI (D02)	7440-57-5	100
									Total		100.00
						1.23	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.95	
									7440-31-5	100.00	
									Total		100.00
						41.700				100.000	

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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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/>

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Semiconductor Device Type: MQ 20 (Lead) QFN 5x5x0.9mm (P8)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total		Mold Compound	% of Total Weight	52.91
Silica, fused	60676-86-0	Mold Compound	47.619	31.967	476,190	EME- G770HCD	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.566	1.723	25,661		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.566	1.723	25,661		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.159	0.107	1,587		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	35.362	23.738	353,616					
Tin	7440-31-5	Lead Frame	0.091	0.061	908					24.37
						Total		Lead Frame	% of Total Weight	36.3
Silver	7440-22-4	Lead Frame	0.692	0.464	6,915	EFTEC64T + Ag	Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.065	0.044	653		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.091	0.061	908		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	1.412	0.948	14,118		Zinc	7440-66-6	0.18	
Acrylate resins Proprietary	Trade Secret	Die Attach	0.326	0.219	3,258		Chromium	7440-47-3	0.25	
Treated silica	Trade Secret	Die Attach	0.036	0.024	362					
Heterocyclic organic compound	Trade Secret	Die Attach	0.036	0.024	362					1.22
						Total		Die Attach	% of Total Weight	1.81
Silicon	7440-21-3	Chip (Die)	4.160	2.793	41,600	8200T	Silver	7440-22-4	78	
Gold	7440-57-5	Wire Bond	0.540	0.363	5,400		Acrylate resins Proprietary	Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	2.873	42,800		Treated silica	Trade Secret	2	
							Heterocyclic organic compound	Trade Secret	2	
TOTALS:			100.000	67.130	1,000,000	Total		100.00		
0.06713 g Total Mass										
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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						2.79	Total (mg)	Chip (Die)	% of Total Weight	4.16
							Doped Silicon	7440-21-3	100	
						Total		100.00		
						0.36	(mg) Total	Wire Bond	% of Total Weight	0.54
							Doped Gold	7440-57-5	100	
						Total		100.00		
						2.87	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.28
							Tin	7440-31-5	100.00	
						Total		100.00		
						67.130				100.000



Semiconductor Device Type: ML 28 (Lead) QFN 6x6 mm (M4/MM)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, fused	60676-86-0	Mold Compound
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound
Phenolic Resin	Trade Secret	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Tin	7440-31-5	Lead Frame
Silver	7440-22-4	Lead Frame
Zinc	7440-66-6	Lead Frame
Chromium	7440-47-3	Lead Frame
Silver	7440-22-4	Die Attach
Acrylate resins Proprietary	Trade Secret	Die Attach
Treated silica	Trade Secret	Die Attach
Heterocyclic organic compound	Trade Secret	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
TOTALS:		

0.1016 g Total Mass

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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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
% Total Weight	mg/part	ppm	52.76 (mg) Total	Mold Compound	% of Total Weight	51.93
46.737	47.485	467,370	EME-6770HCD Epoxy Resin (NLP # 500-033-5)	Silica, fused 60676-86-0	90.00	
2.519	2.559	25,186		Trade Secret	4.85	
2.519	2.559	25,186		Trade Secret	4.85	
0.156	0.158	1,558		1333-86-4	0.30	
37.885	38.491	378,847		Total	100.00	
0.097	0.099	972	39.51 (mg) Total	Lead Frame	% of Total Weight	38.89
0.741	0.753	7,409	EFTEC64T + Ag	Copper 7440-50-8	97.42	
0.070	0.071	700		Tin 7440-31-5	0.25	
0.097	0.099	972		Silver 7440-22-4	1.91	
0.413	0.420	4,134		Zinc 7440-66-6	0.18	
0.095	0.097	954		Chromium 7440-47-3	0.25	
0.011	0.011	106	Total	100.00		
0.011	0.011	106	0.54 (mg) Total	Die Attach	% of Total Weight	0.53
3.290	3.343	32,900	8200T	Silver 7440-22-4	78	
0.950	0.965	9,500		Acrylate resins Proprietary Trade Secret	18	
4.410	4.481	44,100		Treated silica Trade Secret	2	
				Heterocyclic organic compou Trade Secret	2	
			Total	100.00		
			3.34 Total (mg)	Chip (Die)	% of Total Weight	3.29
			Doped Silicon	7440-21-3	100	
			Total	100.00		
			0.97 (mg) Total	Wire Bond	% of Total Weight	0.95
			Doped Gold	7440-57-5	100	
			Total	100.00		
			4.48 (mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.41
			Tin	7440-31-5	100.00	
			Total	100.00		
			101.600			100.000



Semiconductor Device Type: ML or MM 28 (Lead) QFN-S 6x6mm (M2/MB)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight	51.94	
Silica, fused	60676-86-0	Mold Compound	46.746	47.494	467,460	52.77	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2.559	25,191		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.519	2.559	25,191			Phenolic Resin	Trade Secret	4.85
Carbon Black	1333-86-4	Mold Compound	0.156	0.158	1,558			Carbon Black	1333-86-4	0.30
						Total			100.00	
Copper	7440-50-8	Lead Frame	37.145	37.739	371,450	39.50	(mg) Total	Lead Frame	% of Total Weight	38.88
Iron	7439-89-6	Lead Frame	0.914	0.928	9,137		194+AG	Copper	7440-50-8	
Silver	7440-22-4	Lead Frame	0.741	0.753	7,407	Iron		7439-89-6	2.35	
Zinc	7440-66-6	Lead Frame	0.049	0.049	486	Silver		7440-22-4	1.91	
Phosphorous	7723-14-0	Lead Frame	0.032	0.033	321	Zinc		7440-66-6	0.13	
Silver	7440-22-4	Die Attach	0.391	0.397	3,911	Phosphorous		7723-14-0	0.08	
Epoxy Resin	9003-36-5	Die Attach	0.100	0.101	996	Total			100.00	
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.033	0.034	334	0.54	(mg) Total	Die Attach	% of Total Weight	0.53
Phenolic hardener	92-88-6	Die Attach	0.002	0.002	16		CRM-1076DJ	Silver	7440-22-4	
Butyl cellosolve acetate	112-07-2	Die Attach	0.004	0.004	42	Epoxy Resin		9003-36-5	19	
Silicon	7440-21-3	Chip (Die)	3.290	3.343	32,900	t-Butyl phenyl glycidyl ether		3101-60-8	6	
Gold	7440-57-5	Wire Bond	0.950	0.965	9,500	Phenolic hardener		92-88-6	0	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.410	4.481	44,100	Butyl cellosolve acetate		112-07-2	1	
TOTALS:						100.000	101.600	1,000,000		
0.1016 g Total Mass										
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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						3.34	Total (mg)	Chip (Die)	% of Total Weight	3.29
							Doped Silicon	7440-21-3	100	
						Total			100.00	
						0.97	(mg) Total	Wire Bond	% of Total Weight	0.95
							Doped Gold	7440-57-5	100	
						Total			100.00	
						4.48	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.41
							Tin	7440-31-5	100.00	
						Total			100.00	
						101.600				100.000



Semiconductor Device Type: ML 40 (Lead) QFN 6x6x0.9mm (S3)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm						
Silica, fused	60676-86-0	Mold Compound	40.536	40.941	405,360	45.49	(mg) Total	Mold Compound	% of Total Weight	45.04	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.184	2.206	21,844	EME-G770HCD Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00		
Phenolic Resin	Trade Secret	Mold Compound	2.184	2.206	21,844		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.135	0.136	1,351		Phenolic Resin	Trade Secret	4.85		
Copper	7440-50-8	Lead Frame	46.925	47.394	469,248		Carbon Black	1333-86-4	0.30		
Tin	7440-31-5	Lead Frame	0.120	0.122	1,204	Total		100.00			
Silver	7440-22-4	Lead Frame	0.918	0.927	9,176	48.65	(mg) Total	Lead Frame	% of Total Weight	48.17	
Zinc	7440-66-6	Lead Frame	0.087	0.088	867	EFTEC64T + Ag	Copper	7440-50-8	97.42		
Chromium	7440-47-3	Lead Frame	0.120	0.122	1,204		Tin	7440-31-5	0.25		
Silver	7440-22-4	Die Attach	0.226	0.228	2,262		Silver	7440-22-4	1.91		
Acrylate resins Proprietary	Trade Secret	Die Attach	0.052	0.053	522		Zinc	7440-66-6	0.18		
Treated silica	Trade Secret	Die Attach	0.006	0.006	58		Chromium	7440-47-3	0.25		
Heterocyclic organic compound	Trade Secret	Die Attach	0.006	0.006	58		Total		100.00		
Silicon	7440-21-3	Chip (Die)	2.720	2.747	27,200	0.29	(mg) Total	Die Attach	% of Total Weight	0.29	
Gold	7440-57-5	Wire Bond	0.860	0.869	8,600	8200T	Silver	7440-22-4	78		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.920	2.949	29,200		Acrylate resins Proprietary	Trade Secret	18		
TOTALS:			100.000	101.000	1,000,000		Treated silica	Trade Secret	2		
0.1010 g Total Mass							Heterocyclic organic compound	Trade Secret	2		
						Total		100.00			
						2.75	Total (mg)	Chip (Die)	% of Total Weight	2.72	
						Doped Silicon		7440-21-3	100		
						Total		100.00			
						0.87	(mg) Total	Wire Bond	% of Total Weight	0.86	
						Doped Gold		7440-57-5	100		
						Total		100.00			
						2.95	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.92	
						Tin		7440-31-5	100.00		
						Total		100.00			
						101.000				100.000	

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 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.

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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.

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Semiconductor Device Type: ML 44 (Lead) QFN 8x8x0.9 mm (T3 / TR)			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	
Basic Substance	CAS Number	"Contained in" Sub-Component	% Total Weight	mg/part	ppm	75.12	(mg) Total	Mold Compound	% of Total Weight	39.87
Silica, fused	60676-86-0	Mold Compound	35.883	67.604	358,830	EME- G770HCD	Silica, fused	60676-86-0	90.00	Total 100.00
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.934	3.643	19,337		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	1.934	3.643	19,337		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.120	0.225	1,196		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	47.903	90.248	479,025					
Iron	7439-89-6	Lead Frame	1.178	2.220	11,763	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	Total 100.00
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	2.86	(mg) Total	Die Attach	% of Total Weight	1.52
Heterocyclic organic compound	Trade Secret	Die Attach	0.030	0.057	304	8200T	Silver	7440-22-4	78	Total 100.00
Silicon	7440-21-3	Chip (Die)	4.280	8.064	42,800		Acrylate resins Proprietary	Trade Secret	18	
Gold	7440-57-5	Wire Bond	0.480	0.904	4,800		Treated silica	Trade Secret	2	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.710	6.990	37,100		Heterocyclic organic compound	Trade Secret	2	
0.1884 g Total Mass			TOTALS:	100.000	188.400	1,000,000				
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/</p> <p>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.</p> <p>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 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.</p> <p>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.</p> <p>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.</p>										
						8.06	Total (mg)	Chip (Die)	% of Total Weight	4.28
							Doped Silicon	7440-21-3	100	Total 100.00
						0.90	(mg) Total	Wire Bond	% of Total Weight	0.48
							Doped Gold	7440-57-5	100	Total 100.00
						6.99	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.71
							Tin	7440-31-5	100.00	Total 100.00
						188.400				100.000



Semiconductor Device Type: MR 64 (Lead) QFN 9x9x0.9mm (R4)			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		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight	4.48		
Silica, fused	60676-86-0	Mold Compound	4.032	9.370	40,320	EME- G770HCD	Silica, fused	60676-86-0	90.00		
Epoxy Resin	Trade Secret	Mold Compound	0.217	0.505	2,173		Epoxy Resin	Trade Secret	4.85		
Phenolic Resin	Trade Secret	Mold Compound	0.217	0.505	2,173		Phenolic Resin	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.013	0.031	134		Carbon Black	1333-86-4	0.30		
			Total				100.00				
Copper	7440-50-8	Lead Frame	40.914	95.085	409,143	97.61	(mg) Total		42		
Tin	7440-31-5	Lead Frame	0.105	0.244	1,050		Lead Frame			% of Total Weight	
Silver	7440-22-4	Lead Frame	0.800	1.859	8,001	EFTEC64T + 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	(mg) Total		Die Attach	% of Total Weight		
Silicon	7440-21-3	Chip (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 (pins) - Matte Tin / annealed at 150°C for 1 hour	44.130	102,558	441,300		Treated silica	Trade Secret	2		
			TOTALS:				100.000			232.400	1,000,000
0.2324 g Total Mass											
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						13.94		Total (mg)	Chip (Die)	% of Total Weight	6
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	
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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/offering/industries/chemicals/plastics/						2.25		(mg) Total	Wire Bond	% of Total Weight	0.97
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.								Doped Gold	7440-57-5	100	
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								Total			100.00
						232.400					100.000



Semiconductor Device Type: MJ 24 (Lead) QFN 4x4mm (J3)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, fused	60676-86-0	Mold Compound	43.902	19.374	439,020	21.53	Silica, fused 60676-86-0	90.00	48.78	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.366	1.044	23,658					
Phenolic Resin	Trade Secret	Mold Compound	2.366	1.044	23,658					
Carbon Black	1333-86-4	Mold Compound	0.146	0.065	1,463					
Copper	7440-50-8	Lead Frame	37.193	16.413	371,930	Total			100.00	
Tin	7440-31-5	Lead Frame	0.095	0.042	955	16.85	(mg) Total	Lead Frame	% of Total Weight	38.18
Silver	7440-22-4	Lead Frame	0.727	0.321	7,273	EFTEC64T + Ag	Copper 7440-50-8	97.42		
Zinc	7440-66-6	Lead Frame	0.069	0.030	687					
Chromium	7440-47-3	Lead Frame	0.095	0.042	955					
Silver	7440-22-4	Die Attach	0.967	0.427	9,672					
Acrylate resins Proprietary	Trade Secret	Die Attach	0.223	0.098	2,232					
Treated silica	Trade Secret	Die Attach	0.025	0.011	248					
Heterocyclic organic compound	Trade Secret	Die Attach	0.025	0.011	248	Total			100.00	
Silicon	7440-21-3	Chip (Die)	6.770	2.988	67,700	0.55	(mg) Total	Die Attach	% of Total Weight	1.24
Gold	7440-57-5	Wire Bond	0.750	0.331	7,500	8200T	Silver 7440-22-4	78		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	1.889	42,800					
TOTALS:			100.000	44.130	1,000,000					
0.0441 g Total Mass										
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>										
						2.99	Total (mg)	Chip (Die)	% of Total Weight	6.77
								7440-21-3	100	
								Total	100.00	
						0.33	(mg) Total	Wire Bond	% of Total Weight	0.75
								JG PSSI (D02)	7440-57-5	100
								Total	100.00	
						1.89	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.28
								7440-31-5	100.00	
								Total	100.00	
						44.130				100.000



Semiconductor Device Type: QU6E 06 (Lead) UQFN 3x1.6x0.55mm (QU)			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight
Silica, fused	60676-86-0	Mold Compound	18.225
Epoxy Resin	Trade Secret	Mold Compound	0.982
Phenolic Resin	Trade Secret	Mold Compound	0.982
Carbon Black	1333-86-4	Mold Compound	0.061
Copper	7440-50-8	Lead Frame	69.935
Nickel	7440-02-0	Lead Frame	1.865
Silicon	7440-21-3	Lead Frame	0.330
Magnesium	7439-95-4	Lead Frame	0.073
Silver	7440-22-4	Lead Frame	1.226
Ag	7440-22-4	Die Attach	1.710
Epoxy resin	Trade secret	Die Attach	0.342
Aliphatic anhydride	Trade secret	Die Attach	0.114
2-Butoxyethyl acetate	112-07-2	Die Attach	0.057
Polymeric material	Trade secret	Die Attach	0.057
Silicon	1303-00-0	Chip (Die)	2.120
Doped Gold	7440-57-5	Wire Bond	0.540
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.380
TOTALS:			100.000

0.0067 g Total Mass

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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
1.36	(mg) Total	Mold Compound	% of Total Weight	20.25		
G770HT	Silica, fused	60676-86-0	90.00			
	Epoxy Resin	Trade Secret	4.85			
	Phenolic Resin	Trade Secret	4.85			
	Carbon Black	1333-86-4	0.30			
	Total		100.00			
4.92	(mg) Total	Lead Frame	% of Total Weight	73.43		
C7025 + Ag	Copper	7440-50-8	95.24			
	Nickel	7440-02-0	2.54			
	Silicon	7440-21-3	0.45			
	Magnesium	7439-95-4	0.10			
	Silver	7440-22-4	1.67			
	Total		100.00			
0.15	(mg) Total	Die Attach	% of Total Weight	2.28		
8352L	Ag	7440-22-4	75.00			
	Epoxy resin	Trade secret	15.00			
	Aliphatic anhydride	Trade secret	5.00			
	2-Butoxyethyl acetate	112-07-2	2.50			
	Polymeric material	Trade secret	3			
Total		100.00				
0.14	(mg) Total	Chip (Die)	% of Total Weight	2.12		
Doped GaAs	GaAs	1303-00-0	100			
	Total		100.00			
0.04	(mg) Total	Wire Bond	% of Total Weight	0.54		
Doped Gold	Doped Gold	7440-57-5	100.00			
	Total		100.00			
0.09	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.38		
Tin	Tin	7440-31-5	100.00			
	Total		100.00			
6.700			100.00			100.000



Semiconductor Device Type: QUBE 12 (Lead) UQFN 2x2x0.55mm (QM)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1.74	(mg) Total	Mold Compound	% of Total Weight	34.08
Silica, fused	60676-86-0	Mold Compound	30.672	1.564	306.720	EME G770HT Epoxy Resin (NLP # 500-033-5)		Silica, fused	60676-86-0	90.00
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.653	0.084	16.529			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					
Nickel	7440-02-0	Lead Frame	1.156	0.059	11.565	Total			100.00	
Silicon	7440-21-3	Lead Frame	0.205	0.010	2.049	2.32 (mg) Total			45.53	
Magnesium	7439-95-4	Lead Frame	0.046	0.002	455	C7025+Ag		Copper	7440-50-8	95.24
Silver	7440-22-4	Lead Frame	0.760	0.039	7.599			Nickel	7440-02-0	2.54
Silver	7440-22-4	Die Attach	2.256	0.115	22.560			Silicon	7440-21-3	0.45
Epoxy Resin	Trade secret	Die Attach	0.564	0.029	5.640			Magnesium	7439-95-4	0.10
GaAs	1303-00-0	Chip (Die)	14.370	0.733	143.700			Silver	7440-22-4	1.67
Doped Gold	7440-57-5	Wire Bond	1.060	0.054	10.600	Total			100.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.140	0.109	21.400	0.14 (mg) Total			2.82	
TOTALS:			100.000	5.100	1,000,000	8352L		Silver	7440-22-4	80.00
0.0051 g Total Mass						Total			100.00	
						0.73 (mg) Total			14.37	
						Doped GaAs		GaAs	1303-00-0	100
						Total			100.00	
						0.05 (mg) Total			1.06	
								Doped Gold	7440-57-5	100.00
						Total			100.00	
						0.11 (mg) Total			2.14	
								Tin	7440-31-5	100.00
						Total			100.00	
						5.100			100.000	

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 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.

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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.

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Semiconductor Device Type: QUCE 16 (Lead) UQFN/XDFN 3x3x0.45mm (QR)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	10.61	(mg) Total	Mold Compound	% of 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		
							Total				100.00
Copper	7440-50-8	Lead Frame	39.630	8.084	396,298	8.49	(mg) Total		Lead Frame	% of Total Weight	41.61
Nickel	7440-02-0	Lead Frame	1.057	0.216	10,569						
Silicon	7440-21-3	Lead Frame	0.187	0.038	1,872	C7025 + Ag	Copper	7440-50-8	95.24		
Magnesium	7439-95-4	Lead Frame	0.042	0.008	416		Nickel	7440-02-0	2.54		
Silver	7440-22-4	Lead Frame	0.694	0.142	6,945		Silicon	7440-21-3	0.45		
Silver	7440-22-4	Die Attach	0.632	0.129	6,320		Magnesium	7439-95-4	0.10		
Epoxy Resin	Trade secret	Die Attach	0.158	0.032	1,580		Silver	7440-22-4	1.67		
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.170	0.443	21,700				Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.490	0.100	4,900	0.16	(mg) Total		Die Attach	% of Total Weight	0.79
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	0.602	29,500						
			TOTALS:			100.000	20.400	1,000,000			
0.0204 g Total Mass											
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						0.44		(mg) Total	Chip (Die)	% of Total Weight	2.17
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.						Doped GaAs		Gallium arsenide	1303-00-0	100	
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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/						0.10		(mg) Total	Wire Bond	% of Total Weight	0.49
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.								Doped Gold	7440-57-5	100.00	
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						Total			100.00		
						20.400				100.000	



Semiconductor Device Type: Q3DE 20 (Lead) UQFN 3x3x0.55mm (QD)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	10.59	(mg) Total	Mold Compound	% of Total 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	Trade secret	Die Attach	0.164	0.034	1,640			Magnesium	7439-95-4	0.10
Silicon	7440-21-3	Chip (Die)	2.180	0.448	21,800	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
0.02053 g Total Mass			TOTALS:	100.000	20.530	1,000,000		Epoxy Resin	Trade secret	20.00
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>										
						0.45	(mg) Total	Chip (Die)	% of Total Weight	2.18
						Doped Silicon		Doped Silicon	7440-21-3	100
						Total 100.00				
						0.11	(mg) Total	Wire Bond	% of Total Weight	0.53
								Doped Gold	7440-57-5	100.00
						Total 100.00				
						0.61	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.99
								Tin	7440-31-5	100.00
						Total 100.00				
						20.530				100.000



Semiconductor Device Type: MV 28 (Lead) UQFN 4x4x0.5mm (R6)			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			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	11.99 EME-G770HCD	(mg) Total	Mold Compound	% of Total Weight	45.93		
Silica, fused	60676-86-0	Mold Compound	41.337	10.789	413,370	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00	Total 100.00		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.228	0.581	22,276		Trade Secret	Trade Secret	4.85			
Phenolic Resin	Trade Secret	Mold Compound	2.228	0.581	22,276		Phenolic Resin	Trade Secret	4.85			
Carbon Black	1333-86-4	Mold Compound	0.138	0.036	1,378		Carbon Black	1333-86-4	0.30			
Copper	7440-50-8	Lead Frame	34.095	8.899	340,953	Total			100.00	35		
Tin	7440-31-5	Lead Frame	0.088	0.023	875	9.14 EFTEC64T + Ag	(mg) Total	Lead Frame	% of Total Weight			
Silver	7440-22-4	Lead Frame	0.667	0.174	6,668	Copper	Copper	7440-50-8	97.42	Total 100.00		
Zinc	7440-66-6	Lead Frame	0.063	0.016	630		Tin	7440-31-5	0.25			
Chromium	7440-47-3	Lead Frame	0.088	0.023	875		Silver	7440-22-4	1.91			
Silver	7440-22-4	Die Attach	1.123	0.293	11,232		Zinc	7440-66-6	0.18			
Acrylate resins Proprietary	Trade Secret	Die Attach	0.259	0.068	2,592		Chromium	7440-47-3	0.25			
Treated silica	Trade Secret	Die Attach	0.029	0.008	288	Total			100.00	1.44		
Heterocyclic organic compound	Trade Secret	Die Attach	0.029	0.008	288	0.38 8200T	(mg) Total	Die Attach	% of Total Weight			
Silicon	7440-21-3	Chip (Die)	8.700	2.271	87,000	Acrylate resins Proprietary	Silver	7440-22-4	78	Total 100.00		
Gold	7440-57-5	Wire Bond	0.510	0.133	5,100		Trade Secret	Trade Secret	18			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	8.420	2.198	84,200		Treated silica	Trade Secret	2			
TOTALS:			100.000	26.100	1,000,000		Heterocyclic organic compound	Trade Secret	2			
0.0261 g Total Mass						Total			100.00			
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						2.27			Total (mg)	Chip (Die)	% of Total Weight	8.7
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	Total	100.00
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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/offering/industries/chemicals/plastics/						Doped Gold			7440-57-5	100	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.						2.20			(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.42
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Semiconductor Device Type: MV 40 (Lead) UQFN 5x5x0.5mm (S5)			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			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	18.45 Epoxy Resin (NLP # 500-033-5)	(mg) Total	Mold Compound	% of Total Weight	43.41		
Silica, fused	60676-86-0	Mold Compound	39.069	16.604	390,690	EME-G770HCD	Silica, fused	60676-86-0	90.00	43.41		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.105	0.895	21,054			Epoxy Resin (NLP # 500-033-5)	Trade Secret		4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.105	0.895	21,054				Phenolic Resin		Trade Secret	4.85
Carbon Black	1333-86-4	Mold Compound	0.130	0.055	1,302				Carbon Black		1333-86-4	0.30
									Total			100.00
Copper	7440-50-8	Lead Frame	41.966	17.836	419,664	18.31 (mg) Total			43.08			
Tin	7440-31-5	Lead Frame	0.108	0.046	1,077	EFTEC64T + Ag	Lead Frame		43.08			
Silver	7440-22-4	Lead Frame	0.821	0.349	8,207		Copper	7440-50-8		97.42		
Zinc	7440-66-6	Lead Frame	0.078	0.033	775			Tin		7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.108	0.046	1,077			Silver		7440-22-4	1.91	
Silver	7440-22-4	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	
Treated silica	Trade Secret	Die Attach	0.032	0.014	318			Total			100.00	
Heterocyclic organic compound	Trade Secret	Die Attach	0.032	0.014	318		0.68 (mg) Total			1.59		
Silicon	7440-21-3	Chip (Die)	6.650	2.826	66,500		8200T	Silver		7440-22-4	78	
Gold	7440-57-5	Wire Bond	1.540	0.655	15,400			Acrylate resins Proprietary		Trade Secret	18	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.730	1.585	37,300	Treated silica		Trade Secret	2			
			TOTALS: 100.000 42.500 1,000,000			Heterocyclic organic compound		Trade Secret	2			
UTL / Material compilation 0.0425 g Total Mass						2.83 Total (mg)			6.65			
						Doped Silicon		7440-21-3	100			
						Total			100.00			
						0.65 (mg) Total			1.54			
						Doped Gold		7440-57-5	100			
						Total			100.00			
						1.59 (mg) Total			3.73			
						Tin		7440-31-5	100.00			
						Total			100.00			

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Semiconductor Device Type: QVCE 16 (Lead) VQFN 3x3x0.9mm (CV)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	12.83 (mg) Total		Mold Compound	% of Total Weight	50.7
Silica, vitreous (or fused)	60676-86-0	Mold Compound	43.095	10.903	430,950	G770HT	Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.411	1.116	44,109		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.042	0.770	30,420		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.152	0.038	1,521		Carbon Black	1333-86-4	0.30	
							Total			
Copper	7440-50-8	Lead Frame	41.540	10.510	415,397	11.00 (mg) Total		Lead Frame	% of Total Weight	43.48
Iron	7439-89-6	Lead Frame	1.022	0.259	10,218	C194 + Ag	Copper	7440-50-8	95.54	
Silver	7440-22-4	Lead Frame	0.828	0.210	8,283		Iron	7439-89-6	2.35	
Zinc	7440-66-6	Lead Frame	0.054	0.014	544		Silver	7440-22-4	1.91	
Phosphorous	7723-14-0	Lead Frame	0.036	0.009	359		Zinc	7440-66-6	0.13	
Silver	7440-22-4	Die Attach	1.360	0.344	13,600		Phosphorous	7723-14-0	0.08	
Epoxy Resin	Trade secret	Die Attach	0.340	0.086	3,400	Total			100.00	
Doped GaAs	1300-00-00	Chip (Die)	1.340	0.339	13,400	0.43 (mg) Total		Die Attach	% of Total Weight	1.7
Doped Gold	7440-57-5	Wire Bond	0.400	0.101	4,000	8352L	Silver	7440-22-4	80.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.380	0.602	23,800		Epoxy Resin	Trade secret	20.00	
			TOTALS: 100.000 25.300 1,000,000			Total			100.00	
0.0253 g Total Mass										
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 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.										
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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/offers/industries/chemicals/plastics/										
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						0.34 (mg) Total		Chip (Die)	% of Total Weight	1.34
						Doped GaAs		1300-00-00	100	
						Total			100.00	
						0.10 (mg) Total		Wire Bond	% of Total Weight	0.4
						Doped Gold		7440-57-5	100	
						Total			100.00	
						0.60 (mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.38
						Tin		7440-31-5	100.00	
						Total			100.00	
						25.300				100.000



Semiconductor Device Type: QCF 16 (Lead) WQFN 3x3x0.75mm (3Q)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous (or fused)	60676-86-0	Mold Compound
Epoxy Resin	Trade Secret	Mold Compound
Phenolic Resin	Trade Secret	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Iron	7439-89-6	Lead Frame
Phosphorous	7723-14-0	Lead Frame
Zinc (Metal)	7440-44-0	Lead Frame
Silver	7440-22-4	Die Attach
Acrylate resins Proprietary	Trade Secret	Die Attach
Treated silica	Trade Secret	Die Attach
Heterocyclic organic compound	Trade Secret	Die Attach
Gallium arsenide	1300-00-00	Chip (Die)
Gold	7440-57-5	Wire Bond
Nickel	7440-02-0	Plating on external leads (pins)
Palladium	7440-05-03	Plating on external leads (pins)
Gold	7440-57-5	Plating on external leads (pins)
TOTALS:		
0.0219 g Total Mass		

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 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.

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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/>

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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 e4		
			10.05	(mg) Total	Mold Compound	% of Total Weight	45.91	
			G770HT	Silica, vitreous (or fused)	60676-86-0	85.00		
				Epoxy Resin	Trade Secret	8.70		
				Phenolic Resin	Trade Secret	6.00		
				Carbon Black	1333-86-4	0.30		
				Total				100.00
			10.91	(mg) Total	Lead Frame	% of Total Weight	49.84	
			C194	Copper	7440-50-8	97.30		
				Iron	7439-89-6	2.30		
				Phosphorous	7723-14-0	0.25		
				Zinc (Metal)	7440-44-0	0.15		
				Total				100.00
			0.43	(mg) Total	Die Attach	% of Total Weight	1.96	
			8200T	Silver	7440-22-4	78		
				Acrylate resins Proprietary	Trade Secret	18		
				Treated silica	Trade Secret	2		
				Heterocyclic organic compound	Trade Secret	2		
				Total				100.00
			0.34	Total (mg)	Chip (Die)	% of Total Weight	1.55	
						Doped GaAs	1300-00-00	100
						Total		100.00
			0.10	(mg) Total	Wire Bond	% of Total Weight	0.46	
						Doped Gold	7440-57-5	100
						Total		100.00
			0.06	(mg) Total	Plating on external leads (pins)	% of Total Weight	0.28	
						Nickel	7440-02-0	94.50
						Palladium	7440-05-03	5.00
						Gold	7440-57-5	0.50
						Total		100.00
			21.900				100.000	



Semiconductor Device Type: QDE 24 (Lead) WQFN 4x4x0.75 mm (QW)				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
				17.88	(mg) Total	Mold Compound	% of Total Weight	45.6		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, fused	60676-86-0	Mold Compound	41.040	16.088	410,400					
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.212	0.867	22,116					
Phenolic Resin	Trade Secret	Mold Compound	2.212	0.867	22,116					
Carbon Black	1333-86-4	Mold Compound	0.137	0.054	1,368					
Copper	7440-50-8	Lead Frame	47.559	18.643	475,586					
Iron	7439-89-6	Lead Frame	1.170	0.459	11,698					
Silver	7440-22-4	Lead Frame	0.948	0.372	9,483					
Zinc	7440-66-6	Lead Frame	0.062	0.024	622					
Phosphorous	7723-14-0	Lead Frame	0.041	0.016	411					
Silver	7440-22-4	Die Attach	0.858	0.336	8,580					
Acrylate resins Proprietary	Trade Secret	Die Attach	0.198	0.078	1,980					
Treated silica	Trade Secret	Die Attach	0.022	0.009	220					
Heterocyclic organic compound	Trade Secret	Die Attach	0.022	0.009	220					
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	0.870	0.341	8,700					
Doped Gold	7440-57-5	Wire Bond	0.380	0.149	3,800					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.270	0.890	22,700					
0.0392 g Total Mass			TOTALS:	100.000	39.200	1,000,000				
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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						19.51	(mg) Total	Lead Frame	% of Total Weight	49.78
						0.43	(mg) Total	Die Attach	% of Total Weight	1.1
						0.34	(mg) Total	Chip (Die)	% of Total Weight	0.87
						0.15	(mg) Total	Wire Bond	% of Total Weight	0.38
						0.89	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.27
						39.200	Total	100.00		100.000



Semiconductor Device Type: QXBE 12 (Lead) XQFN 2x2x0.45mm (QL)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	6.10 (mg) Total	Mold Compound	% of 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	
						Total			100.00	
Copper	7440-50-8	Lead Frame	34.039	3.438	340,391	3.61 (mg) Total	Lead Frame	% of Total Weight	35.74	
Nickel	7440-02-0	Lead Frame	0.908	0.092	9,078	C7025 + Ag	Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.161	0.016	1,608		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.036	0.004	357		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Lead Frame	0.597	0.060	5,965		Magnesium	7439-95-4	0.10	
Silver	7440-22-4	Die Attach	0.904	0.091	9,040		Silver	7440-22-4	1.67	
Epoxy Resin	Trade secret	Die Attach	0.226	0.023	2,260		Total			100.00
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.230	0.124	12,300	0.11 (mg) Total	Die Attach	% of Total Weight	1.13	
Gold	7440-57-5	Wire Bond	0.370	0.037	3,700	8352L	Silver	7440-22-4	80.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100	0.111	11,000		Epoxy Resin	Trade secret	20.00	
TOTALS:						100.000	10.100	1,000,000		
0.0101 g Total Mass										
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						0.12 (mg) Total	Chip (Die)	% of Total Weight	1.23	
						Doped GaAs	Gallium arsenide (GaAs)	1303-00-0	100.00	
						Total			100.00	
						0.04 (mg) Total	Wire Bond	% of Total Weight	0.37	
						Doped Gold	7440-57-5	100.00		
						Total			100.00	
						0.11 (mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.1	
						Tin	7440-31-5	100.00		
						Total			100.00	
						10.100			100.000	



Semiconductor Device Type: QXCE 16 (Lead) XQFN 3x3x0.45mm (QR)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	7.94	(mg) Total	Mold Compound	% of 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	
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	
								Total			100.00
Copper	7440-50-8	Lead Frame	45.544	8.070	455.442	C7025 + Ag	8.47	(mg) Total	Lead Frame	% of Total Weight	47.82
Nickel	7440-02-0	Lead Frame	1.215	0.215	12.146						
Silicon	7440-21-3	Lead Frame	0.215	0.038	2.152						
Magnesium	7439-95-4	Lead Frame	0.048	0.008	478						
Silver	7440-22-4	Lead Frame	0.798	0.141	7.981						
Silver	7440-22-4	Die Attach	0.728	0.129	7.280			Copper	7440-50-8	95.24	
Epoxy Resin	Trade secret	Die Attach	0.182	0.032	1.820			Nickel	7440-02-0	2.54	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.490	0.441	24.900			Silicon	7440-21-3	0.45	
Doped Gold	7440-57-5	Wire Bond	0.560	0.099	5.600			Magnesium	7439-95-4	0.10	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.390	0.601	33.900			Silver	7440-22-4	1.67	
			TOTALS: 100.000 17.720 1,000,000			0.16	(mg) Total	Die Attach	% of Total Weight	0.91	
						8352L		Silver	7440-22-4	80.00	
								Total			100.00
						0.44	(mg) Total	Chip (Die)	% of Total Weight	2.49	
						Doped GaAs		Gallium arsenide	1303-00-0	100	
								Total			100.00
						0.10	(mg) Total	Wire Bond	% of Total Weight	0.56	
						Doped Gold		Doped Gold	7440-57-5	100.00	
								Total			100.00
						0.60	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.39	
						Tin		Tin	7440-31-5	100.00	
								Total			100.00
						17.720				100.000	

Semiconductor Device Type: QXCE 16 (Lead) XQFN 3x3x0.45mm (QR)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	40.347	7.149	403.470
Epoxy Resin	Trade Secret	Mold Compound	2.174	0.385	21.743
Phenolic Resin	Trade Secret	Mold Compound	2.174	0.385	21.743
Carbon Black	1333-86-4	Mold Compound	0.134	0.024	1.345
Copper	7440-50-8	Lead Frame	45.544	8.070	455.442
Nickel	7440-02-0	Lead Frame	1.215	0.215	12.146
Silicon	7440-21-3	Lead Frame	0.215	0.038	2.152
Magnesium	7439-95-4	Lead Frame	0.048	0.008	478
Silver	7440-22-4	Lead Frame	0.798	0.141	7.981
Silver	7440-22-4	Die Attach	0.728	0.129	7.280
Epoxy Resin	Trade secret	Die Attach	0.182	0.032	1.820
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.490	0.441	24.900
Doped Gold	7440-57-5	Wire Bond	0.560	0.099	5.600
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.390	0.601	33.900

0.0177 g Total Mass

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 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.

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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/offering/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.

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Semiconductor Device Type: SAE 08 (Lead) SOIC 3.90mm(.150in) (C2)			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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm				
Silica, vitreous	60676-86-0	Mold Compound	51.000	36.720	510,000				43.20 (mg) Total Mold Compound % of Total Weight 60
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.646	36,750				
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.646	36,750				
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.470	1.058	14,700				
Carbon Black	1333-86-4	Mold Compound	0.180	0.130	1,800				
Copper	7440-50-8	Lead Frame	30.572	22.012	305,720				
Iron	7439-89-6	Lead Frame	0.752	0.541	7,520				
Silver	7440-22-4	Lead Frame	0.610	0.439	6,096				
Zinc	7440-66-6	Lead Frame	0.040	0.029	400				
Phosphorous	7723-14-0	Lead Frame	0.026	0.019	264				
Silver (Ag)	7440-22-4	Die Attach	0.064	0.046	640				
Epoxy Resin	Trade Secret	Die Attach	0.014	0.010	136				
Copper (Cu)	7440-50-8	Die Attach	0.002	0.002	24				
Silicon	7440-21-3	Chip (Die)	4.820	3.470	48,200				
Gold	7440-57-5	Wire Bond	0.100	0.072	1,000				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	2.160	30,000				
TOTALS:			100.000	72.000	1,000,000				

0.0720 g Total Mass

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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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																		
			43.20 (mg) Total Mold Compound % of Total Weight 60																					
EME-G600			<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td colspan="2" style="text-align: right;">Total</td><td>100.00</td></tr> </table>			Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	Total		100.00	
Silica, vitreous	60676-86-0	85.00																						
Epoxy Resin	Trade Secret	6.13																						
Phenolic Resin	Trade Secret	6.13																						
Epoxy, Cresol Novolac	29690-82-2	2.45																						
Carbon Black	1333-86-4	0.30																						
Total		100.00																						
23.04 (mg) Total Lead Frame % of Total Weight 32			194+AG																					
<table border="1"> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td colspan="2" style="text-align: right;">Total</td><td>100.00</td></tr> </table>			Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	Total		100.00				
Copper	7440-50-8	95.54																						
Iron	7439-89-6	2.35																						
Silver	7440-22-4	1.91																						
Zinc	7440-66-6	0.13																						
Phosphorous	7723-14-0	0.08																						
Total		100.00																						
0.06 (mg) Total Die Attach % of Total Weight 0.08			8340																					
<table border="1"> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td>80</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>17</td></tr> <tr><td>Copper (Cu)</td><td>7440-50-8</td><td>3</td></tr> <tr><td colspan="2" style="text-align: right;">Total</td><td>100.00</td></tr> </table>			Silver (Ag)	7440-22-4	80	Epoxy Resin	Trade Secret	17	Copper (Cu)	7440-50-8	3	Total		100.00										
Silver (Ag)	7440-22-4	80																						
Epoxy Resin	Trade Secret	17																						
Copper (Cu)	7440-50-8	3																						
Total		100.00																						
3.47 Total (mg) Chip (Die) % of Total Weight 4.82																								
<table border="1"> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td></tr> <tr><td colspan="2" style="text-align: right;">Total</td><td>100.00</td></tr> </table>			Doped Silicon	7440-21-3	100	Total		100.00																
Doped Silicon	7440-21-3	100																						
Total		100.00																						
0.07 (mg) Total Wire Bond % of Total Weight 0.1																								
<table border="1"> <tr><td>Doped Gold</td><td>7440-57-5</td><td>100</td></tr> <tr><td colspan="2" style="text-align: right;">Total</td><td>100.00</td></tr> </table>			Doped Gold	7440-57-5	100	Total		100.00																
Doped Gold	7440-57-5	100																						
Total		100.00																						
2.16 (mg) Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour % of Total Weight 3																								
<table border="1"> <tr><td>Tin</td><td>7440-31-5</td><td>100.00</td></tr> <tr><td colspan="2" style="text-align: right;">Total</td><td>100.00</td></tr> </table>			Tin	7440-31-5	100.00	Total		100.00																
Tin	7440-31-5	100.00																						
Total		100.00																						
72.000			100.00			100.000																		



Semiconductor Device Type: OA and SN 08 (Lead) (SOIC) (Small Outline -150mil) (C2)			"Contained In" Sub-Component		
Basic Substance	CAS Number		% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	69.354	54.096	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	4.774	61,207
Phenolic Resin	Trade Secret	Mold Compound	4.078	3.181	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.193	2,474
Copper	7440-50-8	Lead Frame	10.031	7.825	100,314
Iron	7439-89-6	Lead Frame	0.247	0.192	2,468
Silver	7440-22-4	Lead Frame	0.200	0.156	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.010	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.007	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.439	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.082	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.044	563
Modified Amine	827-43-0	Die Attach	0.026	0.020	263
Silicon	7440-21-3	Chip (Die)	7.500	5.850	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.153	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.003	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.975	12,500
TOTALS:			100.000	78.000	1,000,000

0.0780 g Total Mass

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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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
62.24	(mg) Total	Mold Compound	% of Total Weight	79.8		
SG-8300ECM	Silica, vitreous	60676-86-0	86.91			
	Epoxy Resin	Trade Secret	7.67			
	Phenolic Resin	Trade Secret	5.11			
	Carbon Black	1333-86-4	0.31			
	Total			100.00		
8.19	(mg) Total	Lead Frame	% of Total Weight	10.5		
CDA194+Ag	Copper	7440-50-8	95.54			
	Iron	7439-89-6	2.35			
	Silver	7440-22-4	1.91			
	Zinc	7440-66-6	0.13			
	Phosphorous	7723-14-0	0.08			
	Total			100.00		
0.59	(mg) Total	Die Attach	% of Total Weight	0.75		
8390A	Silver (Ag)	7440-22-4	75			
	Modified Epoxy Resin	13561-08-5	14			
	Diglycidylether of bisphenol-F	54208-63-8	8			
	Modified Amine	827-43-0	4			
Total			100.00			
5.85	Total (mg)	Chip (Die)	% of Total Weight	7.5		
		Doped Silicon	7440-21-3	100		
Total			100.00			
0.16	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2		
		Copper	7440-50-8	98		
		Palladium	7440-05-3	2		
Total			100.00			
0.98	(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	100.00		
Total			100.00			
			78.000	100.000		



Semiconductor Device Type: SL 14 (Lead) SOIC (Small Outline - 150mil) (D3/DG)			Termination Base Alloy: Copper Alloy (Cu)			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	
Silica, vitreous	60676-86-0	Mold Compound	69.354	99.315	693,542	
Epoxy Resin	Trade Secret	Mold Compound	6.121	8.765	61,207	
Phenolic Resin	Trade Secret	Mold Compound	4.078	5.839	40,778	
Carbon Black	1333-86-4	Mold Compound	0.247	0.354	2,474	
Copper	7440-50-8	Lead Frame	10.031	14.365	100,314	
Iron	7439-89-6	Lead Frame	0.247	0.353	2,468	
Silver	7440-22-4	Lead Frame	0.200	0.286	2,000	
Zinc	7440-66-6	Lead Frame	0.013	0.019	131	
Phosphorous	7723-14-0	Lead Frame	0.009	0.012	87	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.806	5,625	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.150	1,050	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.081	563	
Modified Amine	827-43-0	Die Attach	0.026	0.038	263	
Silicon	7440-21-3	Chip (Die)	7.500	10.740	75,000	
Doped Silicon	7440-21-3	Wire Bond	0.200	0.286	2,000	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.790	12,500	
0.1432 g Total Mass			TOTALS:	100.000	143.200	1,000,000

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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
(mg) Total	Mold Compound	% of Total Weight	79.8	
114.27	SG-8300GM	79.8		
	Silica, vitreous	60676-86-0	86.91	
	Epoxy Resin	Trade Secret	7.67	
	Phenolic Resin	Trade Secret	5.11	
	Carbon Black	1333-86-4	0.31	
Total			100.00	
15.04	CDA 194+AG	10.5		
	Copper	7440-50-8	95.54	
	Iron	7439-89-6	2.35	
	Silver	7440-22-4	1.91	
	Zinc	7440-66-6	0.13	
	Phosphorous	7723-14-0	0.08	
Total			100.00	
1.07	8390A	0.75		
	Silver (Ag)	7440-22-4	75.00	
	Modified Epoxy Resin	13561-08-5	14.00	
	Diglycidylether of bisphenol	54208-63-8	7.50	
	Modified Amine	827-43-0	3.50	
Total			100.00	
10.74	Doped Silicon	7.5		
	Doped Silicon	7440-21-3	100	
Total			100.00	
0.29	Wire Bond	0.2		
	Doped Silicon	7440-21-3	100	
Total			100.00	
1.79	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.25		
	Tin	7440-31-5	100.00	
Total			100.00	
143.200				100.000



Semiconductor Device Type: TF, F, OE, SO, SL 16 (Lead) SOIC (Wide Outline - 300mil) (D9 / DZ)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	307.43	(mg) Total	Mold Compound	% of Total Weight	70.19
Silica, vitreous	60676-86-0	Mold Compound	59.662	261.317	596,615	EME- 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	1333-86-4	Mold Compound	0.211	0.922	2,106		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	25.499	111.685	254,990		Total 100.00			
Iron	7439-89-6	Lead Frame	0.627	2.747	6,272	194+AG	(mg) Total	Lead Frame	% of Total Weight	26.69
Silver	7440-22-4	Lead Frame	0.508	2.227	5,084		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.033	0.146	334		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.022	0.096	220		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.370	1.621	3,700		Zinc	7440-66-6	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				
Gamma-butyrolactone	96-48-0	Die Attach	0.015	0.066	150	8290	(mg) Total	Die Attach	% of Total Weight	0.5
Silicon	7440-21-3	Chip (Die)	1.850	8.103	18,500		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.090	0.394	900		Epoxy resin	Trade Secret	20	
Tin	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	
0.4380 g Total Mass			TOTALS:	100.000	438.000		1,000.000	Total 100.00		
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 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 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 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 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.										
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.										
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						8.10	Total (mg)	Chip (Die)	% of Total Weight	1.85
							Doped Silicon	7440-21-3	100	
						Total 100.00				
						0.39	(mg) Total	Wire Bond	% of Total Weight	0.09
							Doped Gold	7440-57-5	100	
						Total 100.00				
						2.98	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at	% of Total Weight	0.68
							Tin	7440-31-5	100.00	
						Total 100.00				
						438.000				100.000



Semiconductor Device Type: SL 16 (Lead) SOIC (Small Outline - 150mil) (D7 / DV)

Basic Substance	CAS Number	"Contained In" Sub-Component	Termination Base Alloy: Copper Alloy (Cu)		
			% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	32.402	51.001	324,020
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.335	3.675	23,349
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.335	3.675	23,349
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.934	1.470	9,339
Carbon Black	1333-86-4	Mold Compound	0.114	0.180	1,144
Copper	7440-50-8	Lead Frame	24.276	38.211	242,761
Iron	7439-89-6	Lead Frame	0.597	0.940	5,971
Silver	7440-22-4	Lead Frame	0.484	0.762	4,841
Zinc	7440-66-6	Lead Frame	0.032	0.050	318
Phosphorous	7723-14-0	Lead Frame	0.021	0.033	210
Silver	7440-22-4	Die Attach	2.618	4.120	26,175
Diester Resin	94-80-4	Die Attach	0.524	0.824	5,235
Functionalized Urethane Resin	72869-86-4	Die Attach	0.175	0.275	1,745
Epoxy Resin	9003-36-5	Die Attach	0.087	0.137	873
Epoxy Resin	13561-08-5	Die Attach	0.087	0.137	873
Silicon	7440-21-3	Chip (Die)	3.180	5.005	31,800
Gold	7440-57-5	Wire Bond	1.210	1.905	12,100
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	28.590	45.001	285,900
TOTALS:			100.000	157.400	1,000,000

0.1574 g Total Mass

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 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.

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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/offering/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.

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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
60.00	(mg) Total	Mold Compound	% of Total Weight	38.12
EME-G600	Silica, vitreous	60676-86-0	85.00	
	Epoxy Resin	Trade Secret	6.13	
	Phenolic Resin	Trade Secret	6.13	
	Epoxy, Cresol Novolac	29690-82-2	2.45	
	Carbon Black	1333-86-4	0.30	
Total			100.00	
40.00	(mg) Total	Lead Frame	% of Total Weight	25.41
194+AG	Copper	7440-50-8	95.54	
	Iron	7439-89-6	2.35	
	Silver	7440-22-4	1.91	
	Zinc	7440-66-6	0.13	
	Phosphorous	7723-14-0	0.08	
Total			100.00	
5.49	(mg) Total	Die Attach	% of Total Weight	3.49
2200D	Silver	7440-22-4	75	
	Diester Resin	94-80-4	15	
	Functionalized Urethane Resin	72869-86-4	5	
	Epoxy Resin	9003-36-5	3	
	Epoxy Resin	13561-08-5	3	
Total			100.00	
5.01	Total (mg)	Chip (Die)	% of Total Weight	3.18
		Doped Silicon	7440-21-3	100
Total			100.00	
1.90	(mg) Total	Wire Bond	% of Total Weight	1.21
		Doped Gold	7440-57-5	100
Total			100.00	
45.00	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	28.59
		Tin	7440-31-5	100.00
Total			100.00	
157.400				100.000



Semiconductor Device Type: SO 18 (Lead) SOIC (Wide Outline - 300mil) (F2 / FJ)

Basic Substance	CAS Number	"Contained In" Sub-Component	Termination Base Alloy: Copper Alloy (Cu)		
			% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	67.830	326.262	678.300
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	23.510	48.878
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	23.510	48.878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	9.404	19.551
Carbon Black	1333-86-4	Mold Compound	0.239	1.152	2.394
Copper	7440-50-8	Lead Frame	10.031	48.251	100.314
Iron	7439-89-6	Lead Frame	0.247	1.187	2.468
Silver	7440-22-4	Lead Frame	0.200	0.962	2.000
Zinc	7440-66-6	Lead Frame	0.013	0.063	1.31
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87
Silver (Ag)	7440-22-4	Die Attach	0.563	2.706	5.625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.505	1.050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.271	563
Modified Amine	827-43-0	Die Attach	0.026	0.126	263
Silicon	7440-21-3	Chip (Die)	7.500	36.075	75.000
Gold	7440-57-5	Wire Bond	0.200	0.962	2.000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.013	12.500
TOTALS:			100.000	481.000	1,000,000

0.4810 g Total Mass

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 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.

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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.

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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
383.84	(mg) Total	Mold Compound	% of Total Weight	79.8
EME-G600	Silica, vitreous	60676-86-0	85.00	
	Epoxy Resin	Trade Secret	6.13	
	Phenolic Resin	Trade Secret	6.13	
	Epoxy, Cresol Novolac	29690-82-2	2.45	
	Carbon Black	1333-86-4	0.30	
	Total			100.00
50.51	(mg) Total	Lead Frame	% of Total Weight	10.5
194+AG	Copper	7440-50-8	95.54	
	Iron	7439-89-6	2.35	
	Silver	7440-22-4	1.91	
	Zinc	7440-66-6	0.13	
	Phosphorous	7723-14-0	0.08	
Total			100.00	
3.61	(mg) Total	Die Attach	% of Total Weight	0.75
8390A	Silver (Ag)	7440-22-4	75	
	Modified Epoxy Resin	13561-08-5	14	
	Diglycidylether of bisphenol-F	54208-63-8	8	
	Modified Amine	827-43-0	4	
Total			100.00	
36.08	Total (mg)	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
Total			100.00	
0.96	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
Total			100.00	
6.01	(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	100.00	
Total			100.00	
481.000				100.000



Semiconductor Device Type: SO 20 (Lead) SOIC (Wide Outline - 300mil) (G5 / GS)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, vitreous	60676-86-0	Mold Compound	61.064	330.967	610.640	389.37	EME-G600	85.00	71.84	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.400	23.849	44.002					
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.400	23.849	44.002					
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.760	9.540	17.601					
Carbon Black	1333-86-4	Mold Compound	0.216	1.168	2.155					
Copper	7440-50-8	Lead Frame	24.735	134.062	247.347					
Iron	7439-89-6	Lead Frame	0.608	3.298	6.084	Total 100.00				
Silver	7440-22-4	Lead Frame	0.493	2.673	4.932	140.32	194+AG	25.89		
Zinc	7440-66-6	Lead Frame	0.032	0.175	324					
Phosphorous	7723-14-0	Lead Frame	0.021	0.116	214					
Silver	7440-22-4	Die Attach	0.252	1.364	2,516					
Epoxy resin	Trade Secret	Die Attach	0.068	0.369	680					
Metal oxide	Trade Secret	Die Attach	0.010	0.055	102					
Gamma-butyrolactone	96-48-0	Die Attach	0.010	0.055	102	Total 100.00				
Silicon	7440-21-3	Chip (Die)	1.150	6.233	11.500	1.84	8290	0.34		
Gold	7440-57-5	Wire Bond	0.100	0.542	1,000					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.680	3.686	6,800					
TOTALS:			100.000	542.000	1,000.000					
0.5420 g Total Mass										
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						6.23				
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.						Total (mg)				
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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/						Dope Silicon				
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.						7440-21-3				
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						(mg) Total				
						Wire Bond				
						7440-57-5				
						100				
						Total 100.00				
						3.69				
						(mg) Total				
						Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour				
						7440-31-5				
						100.00				
						Total 100.00				
						542.000				
						100.000				



Semiconductor Device Type: OG 24 (Lead) SOIC (Wide Outline - 300mil) (K3 / KS)				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		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	462.27	(mg) Total	Mold Compound	% of Total Weight	69.83		
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			
							Total				100.00	
Copper	7440-50-8	Lead Frame	25.757	170,511	257,569	194+AG	178.48	(mg) Total	Lead Frame	% of Total Weight	26.96	
Iron	7439-89-6	Lead Frame	0.634	4.194	6,336		Copper	7440-50-8	95.54			
Silver	7440-22-4	Lead Frame	0.514	3.400	5,136		Iron	7439-89-6	2.35			
Zinc	7440-66-6	Lead Frame	0.034	0.223	337		Silver	7440-22-4	1.91			
Phosphorous	7723-14-0	Lead Frame	0.022	0.147	222		Zinc	7440-66-6	0.13			
Silver	7440-22-4	Die Attach	0.326	2.155	3,256		Phosphorous	7723-14-0	0.08			
Epoxy resin	Trade Secret	Die Attach	0.088	0.583	880	Total			100.00			
Metal oxide	Trade Secret	Die Attach	0.013	0.087	132	8290	2.91	(mg) Total	Die Attach	% of Total Weight	0.44	
Gamma-butyrolactone	96-48-0	Die Attach	0.013	0.087	132		Silver	7440-22-4	74			
Silicon	7440-21-3	Chip (Die)	2.010	13,306	20,100		Epoxy resin	Trade Secret	20			
Gold	7440-57-5	Wire Bond	0.090	0.596	900		Metal oxide	Trade Secret	3			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.670	4.435	6,700		Gamma-butyrolactone	96-48-0	3			
			TOTALS:				100.000			662.000	1,000.000	
0.6620 g Total Mass												
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).												
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							13.31	Total (mg)	Chip (Die)	% of Total Weight	2.01	
							Doped Silicon		7440-21-3	100		
							Total			100.00		
							0.60	(mg) Total	Wire Bond	% of Total Weight	0.09	
							Doped Gold		7440-57-5	100		
							Total			100.00		
							4.44	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.67	
							Tin		7440-31-5	100.00		
							Total			100.00		
							662.000				100.000	



Semiconductor Device Type: SO & OI 28 (Lead) SOIC (Wide Outline - 300mil) (NS / NN)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	614.78	(mg) Total	Mold Compound	% of Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	522,562	678,300	EME-G600	Silica, vitreous	60676-86-0	85.00	Total 100.00
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	37,655	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	37,655	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	15,062	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	1,844	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	77,282	100,314		Total			
Iron	7439-89-6	Lead Frame	0.247	1,901	2,468	80.89	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	1,541	2,000	194+AG	Copper	7440-50-8	95.54	Total 100.00
Zinc	7440-66-6	Lead Frame	0.013	0,101	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0,067	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	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			
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	Total 100.00
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		Diglycidylether of bisphenol-F	54208-63-8	8	
			TOTALS:	100.000	770.400		1,000,000	Modified Amine	827-43-0	
0.7704 g Total Mass										

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 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.

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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/offering/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.

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614.78		(mg) Total	Mold Compound	% of Total Weight	79.8
EME-G600	Silica, vitreous	60676-86-0	85.00	Total 100.00	
	Epoxy Resin	Trade Secret	6.13		
	Phenolic Resin	Trade Secret	6.13		
	Epoxy, Cresol Novolac	29690-82-2	2.45		
	Carbon Black	1333-86-4	0.30		
	Total				100.00
80.89	(mg) Total	Lead Frame	% of Total Weight	10.5	
194+AG	Copper	7440-50-8	95.54	Total 100.00	
	Iron	7439-89-6	2.35		
	Silver	7440-22-4	1.91		
	Zinc	7440-66-6	0.13		
	Phosphorous	7723-14-0	0.08		
	Total				100.00
5.78	(mg) Total	Die Attach	% of Total Weight	0.75	
8390A	Silver (Ag)	7440-22-4	75	Total 100.00	
	Modified Epoxy Resin	13561-08-5	14		
	Diglycidylether of bisphenol-F	54208-63-8	8		
	Modified Amine	827-43-0	4		
Total			100.00		
57.78	Total (mg)	Chip (Die)	% of Total Weight	7.5	
Doped Silicon		7440-21-3	100	Total 100.00	
1.54	(mg) Total	Wire Bond	% of Total Weight	0.2	
Doped Gold		7440-57-5	100	Total 100.00	
9.63	(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	100.00	Total 100.00	
Total					100.00
770.400					100.000



Semiconductor Device Type: SM 08 (Lead) SOIJ (Small Outline-208 mil) (C3)			"Contained In" Sub-Component		
Basic Substance	CAS Number		% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	69.354	86.277	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	7.614	61,207
Phenolic Resin	Trade Secret	Mold Compound	4.078	5.073	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.308	2,474
Copper	7440-50-8	Lead Frame	10.031	12.479	100,314
Iron	7439-89-6	Lead Frame	0.247	0.307	2,468
Silver	7440-22-4	Lead Frame	0.200	0.249	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.016	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.011	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.700	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.131	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.070	563
Modified Amine	827-43-0	Die Attach	0.026	0.033	263
Silicon	7440-21-3	Chip (Die)	7.500	9.330	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.244	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.004	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.555	12,500
TOTALS:			100.000	124.400	1,000,000

0.1244 g Total Mass

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 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.

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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	
	99.27	(mg) Total	Mold Compound	% of Total Weight	79.8
	SG-8300GM	Silica, vitreous	60676-86-0	86.91	
		Epoxy Resin	Trade Secret	7.67	
		Phenolic Resin	Trade Secret	5.11	
		Carbon Black	1333-86-4	0.31	
		Total			100.00
	13.06	(mg) Total	Lead Frame	% of Total Weight	10.5
	CDA194+Ag	Copper	7440-50-8	95.54	
		Iron	7439-89-6	2.35	
		Silver	7440-22-4	1.91	
		Zinc	7440-66-6	0.13	
		Phosphorous	7723-14-0	0.08	
		Total			100.00
	0.93	(mg) Total	Die Attach	% of Total Weight	0.75
	8390A	Silver (Ag)	7440-22-4	75	
		Modified Epoxy Resin	13561-08-5	14	
		Diglycidylether of bisphenol-F	54208-63-8	8	
		Modified Amine	827-43-0	4	
		Total			100.00
	9.33	Total (mg)	Chip (Die)	% of Total Weight	7.5
		Doped Silicon	7440-21-3	100	
		Total			100.00
	0.25	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2
		Copper	7440-50-8	98	
		Palladium	7440-05-3	2	
		Total			100.00
	1.56	(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	100.00	
		Total			100.00
	124.400				100.000



Semiconductor Device Type: S2AF 08 (Lead) SOIJ/SOIC .208in (4B)			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 e4					
Basic Substance	CAS Number	Contained In Sub-Component	% Total Weight	mg/part	ppm	89.96	(mg) Total	Mold Compound	% of Total Weight	66.29				
Silica, vitreous	60676-86-0	Mold Compound	56.347	76.462	563,465	EME-G770HCD	Silica, vitreous	60676-86-0	85.00					
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5.510	40,603		Epoxy Resin	Trade Secret	6.13					
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5.510	40,603		Phenolic Resin	Trade Secret	6.13					
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.624	2.204	16,241		Epoxy, Cresol Novolac	29690-82-2	2.45					
Carbon Black	1333-86-4	Mold Compound	0.199	0.270	1,989		Carbon Black	1333-86-4	0.30					
Copper	7440-50-8	Lead Frame	26.540	36.015	265,403		Total 100.00							
Iron	7439-89-6	Lead Frame	0.653	0.886	6,528	37.70	(mg) Total	Lead Frame	% of Total Weight	27.78				
Silver	7440-22-4	Lead Frame	0.529	0.718	5,292	C194 + Ag (PPF)	Copper	7440-50-8	95.54					
Zinc	7440-66-6	Lead Frame	0.035	0.047	347		Iron	7439-89-6	2.35					
Phosphorous	7723-14-0	Lead Frame	0.023	0.031	229		Silver	7440-22-4	1.91					
Silver	7440-22-4	Die Attach	0.163	0.221	1,628		Zinc	7440-66-6	0.13					
Epoxy resin	Trade Secret	Die Attach	0.044	0.060	440		Phosphorous	7723-14-0	0.08					
Metal oxide	Trade Secret	Die Attach	0.007	0.009	66		Total 100.00							
Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.009	66	0.30	(mg) Total	Die Attach	% of Total Weight	0.22				
Silicon	7440-21-3	Chip (Die)	5.410	7.341	54,100	8290	Silver	7440-22-4	74					
Gold	7440-57-5	Wire Bond	0.150	0.204	1,500		Epoxy resin	Trade Secret	20					
Nickel	7440-02-0	Plating on external leads (pins)(PPF)	0.142	0.192	1,418		Metal oxide	Trade Secret	3					
Palladium	7440-05-03	Plating on external leads (pins)(PPF)	0.008	0.010	75		Gamma-butyrolactone	96-48-0	3					
Gold	7440-57-5	Plating on external leads (pins)(PPF)	0.001	0.001	8		Total 100.00							
0.1357 g Total Mass			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 Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						Doped Silicon					7440-21-3	100		
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.						Total 100.00								
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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/offering/industries/chemicals/plastics/						Doped Gold					7440-57-5	100		
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						Gold					7440-57-5	0.50		
						Total 100.00								

135.70

100



Semiconductor Device Type: CB and NB and TT 03 (Lead) SOT-23 (C6 / CV / M7)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous	60676-86-0	Mold Compound
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound
Epoxy, Cresol Novolac	29690-82-2	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Iron	7439-89-6	Lead Frame
Silver	7440-22-4	Lead Frame
Zinc	7440-66-6	Lead Frame
Phosphorous	7723-14-0	Lead Frame
Silver (Ag)	7440-22-4	Die Attach
Modified Epoxy Resin	13561-08-5	Die Attach
Diglycidylether of bisphenol-F	54208-63-8	Die Attach
Modified Amine	827-43-0	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
TOTALS:		
0.0083 g Total Mass		

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
67.830	5.630	678,300
4.888	0.406	48,878
4.888	0.406	48,878
1.955	0.162	19,551
0.239	0.020	2,394
10.031	0.833	100,314
0.247	0.020	2,468
0.200	0.017	2,000
0.013	0.001	131
0.009	0.001	87
0.563	0.047	5,625
0.105	0.009	1,050
0.056	0.005	563
0.026	0.002	263
7.500	0.623	75,000
0.200	0.017	2,000
1.250	0.104	12,500
100.000	8.300	1,000,000

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
(mg) Total	Mold Compound	% of Total Weight	
6.62			79.8
EME-G600			
Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	0.30	
Total			100.00
0.87			10.5
194+AG			
Copper	7440-50-8	95.54	
Iron	7439-89-6	2.35	
Silver	7440-22-4	1.91	
Zinc	7440-66-6	0.13	
Phosphorous	7723-14-0	0.08	
Total			100.00
0.06			0.75
8390A			
Silver (Ag)	7440-22-4	75	
Modified Epoxy Resin	13561-08-5	14	
Diglycidylether of bisphenol-F	54208-63-8	8	
Modified Amine	827-43-0	4	
Total			100.00
0.62			7.5
Total (mg)			
Doped Silicon	7440-21-3	100	
Total			100.00
0.02			0.2
(mg) Total			
Doped Gold	7440-57-5	100	
Total			100.00
0.10			1.25
(mg) Total			
Tin	7440-31-5	100.00	
Total			100.00
8.300			100.000

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Semiconductor Device Type: CT and OT 05 (Lead) SOT-23A (M7)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	9.42	(mg) Total	Mold Compound	% of Total Weight	63.21
Silica, vitreous	60676-86-0	Mold Compound	53.729	8.006	537,285	EME-G600	Silica, vitreous	60676-86-0	85.00	Total 100.00
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.872	0.577	38,716		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.872	0.577	38,716		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.549	0.231	15,486		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.190	0.028	1,896		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	27.037	4.029	270,371					
Iron	7439-89-6	Lead Frame	0.665	0.099	6,651	4.22	(mg) Total	Lead Frame	% of Total Weight	28.3
Silver	7440-22-4	Lead Frame	0.539	0.080	5,391	194+AG	Copper	7440-50-8	95.54	Total 100.00
Zinc	7440-66-6	Lead Frame	0.035	0.005	354		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.023	0.003	233		Silver	7440-22-4	1.91	
Metal oxide	Trade Secret	Die Attach	0.845	0.126	8,448		Zinc	7440-66-6	0.13	
Epoxy resins	Trade Secret	Die Attach	0.845	0.126	8,448		Phosphorous	7723-14-0	0.08	
Glycol ethers	Trade Secret	Die Attach	0.640	0.095	6,400					
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	Total 100.00
Gold	7440-57-5	Wire Bond	0.740	0.110	7,400		Epoxy resins	Trade Secret	33	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.020	0.301	20,200		Glycol ethers	Trade Secret	25	
TOTALS:			100.000	14.900	1,000,000		Curing / Hardener	Trade Secret	9	
HANA / Material compilation			0.0149 g Total Mass				0.47	Total (mg)	Chip (Die)	
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/offering/industries/chemicals/plastics/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>										
						0.11	(mg) Total	Wire Bond	% of Total Weight	0.74
						Doped Gold		7440-57-5	100	Total 100.00
						0.30	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.02
						Tin		7440-31-5	100.00	Total 100.00
						14.900				100.000



Semiconductor Device Type: CT and OT 05 (Lead) SOT-23 (C7)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	12.77	(mg) Total	Mold Compound	% of 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	Total 100.00		
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	1.68	(mg) Total	Lead Frame	% of Total Weight	10.5		
Iron	7439-89-6	Lead Frame	0.247	0.039	2,468		Copper	7440-50-8	95.54			
Silver	7440-22-4	Lead Frame	0.200	0.032	2,000		Iron	7439-89-6	2.35			
Zinc	7440-66-6	Lead Frame	0.013	0.002	131		Silver	7440-22-4	1.91			
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87	CDA194+Ag	Zinc	7440-66-6	0.13	Total 100.00		
Silver (Ag)	7440-22-4	Die Attach	0.563	0.090	5,625		Phosphorous	7723-14-0	0.08			
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.017	1,050		Silver (Ag)	7440-22-4	75			
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.009	563		Modified Epoxy Resin	13561-08-5	14			
Modified Amine	827-43-0	Die Attach	0.026	0.004	263	0.12	Diglycidylether of bisphenol-F	54208-63-8	8	Total 100.00		
Silicon	7440-21-3	Chip (Die)	7.500	1.200	75,000		Modified Amine	827-43-0	4			
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.031	1,965		Silicon (Ag)	7440-22-4	75			
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.001	35		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	0.200	12,500	8390A	Diglycidylether of bisphenol-F	54208-63-8	8	Total 100.00		
TOTALS: 100.000 16.000 1,000,000							0.20	(mg) Total	Chip (Die)		% of Total Weight	7.5
0.0160 g Total Mass							1.20	Total (mg)	Chip (Die)		% of Total Weight	7.5
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).								Doped Silicon	7440-21-3		100	
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.						Total 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'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 concern for any regulatory scheme world-wide.						0.03	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2		
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/offering/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.						0.20	Palladium	7440-05-3	2	Total 100.00		
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Semiconductor Device Type: OT 05 (Lead) SOT-23 (P6)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous	60676-86-0	Mold Compound
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound
Epoxy, Cresol Novolac	29690-82-2	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Iron	7439-89-6	Lead Frame
Silver	7440-22-4	Lead Frame
Zinc	7440-66-6	Lead Frame
Phosphorous	7723-14-0	Lead Frame
Aluminum oxide	1344-28-1	Die Attach
Epoxy resin	Trade Secret	Die Attach
Amine (Trade Secret - 10039)	(Trade Secret -	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
TOTALS:		
0.0170 g Total Mass		

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
41.973	7.135	419,730
3.025	0.514	30,245
3.025	0.514	30,245
1.210	0.206	12,098
0.148	0.025	1,481
40.919	6.956	409,187
1.007	0.171	10,065
0.816	0.139	8,159
0.054	0.009	535
0.035	0.006	353
0.106	0.018	1,059
0.193	0.033	1,925
0.012	0.002	116
4.380	0.745	43,800
0.430	0.073	4,300
2.670	0.454	26,700
100.000	17.000	1,000,000

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
(mg) Total	Mold Compound	% of Total Weight	
8.39			49.38
EME-G600			
Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	0.30	
Total			
100.00			
7.28			42.83
194+AG			
Copper	7440-50-8	95.54	
Iron	7439-89-6	2.35	
Silver	7440-22-4	1.91	
Zinc	7440-66-6	0.13	
Phosphorous	7723-14-0	0.08	
Total			
100.00			
0.05			0.31
8006NS			
Aluminum oxide	1344-28-1	34	
Epoxy resin	Trade Secret	62	
Amine (Trade Secret - 10039)	Amine (Trade Secret - 10039)	4	
Total			
100.00			
0.74			4.38
Total (mg)			
Doped Silicon		7440-21-3	100
Total			100.00
0.07			0.43
(mg) Total			
Doped Gold		7440-57-5	100
Total			100.00
0.45			2.67
(mg) Total			
Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			
Tin		7440-31-5	100.00
Total			100.00
17.000			100.000

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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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/>

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Semiconductor Device Type: CH and OT 06 (Lead) SOT-23 (C8 / CZ)			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		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	13.57	(mg) Total	Mold Compound	% of Total Weight	79.8	
Silica, vitreous	60676-86-0	Mold Compound	67.830	11.531	678,300	EME-G600	Silica, vitreous	60676-86-0	85.00	79.8	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878		Epoxy Resin	Trade Secret	6.13		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878		Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.332	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.239	0.041	2,394		Carbon Black	1333-86-4	0.30		
			Total				100.00				
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314	1.79	(mg) Total	Lead Frame	% of Total Weight	10.5	
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468	194+AG	Copper	7440-50-8	95.54	10.5	
Silver	7440-22-4	Lead Frame	0.200	0.034	2,000		Iron	7439-89-6	2.35		
Zinc	7440-66-6	Lead Frame	0.013	0.002	131		Silver	7440-22-4	1.91		
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87		Zinc	7440-66-6	0.13		
Epoxy resin	Trade Secret	Die Attach	0.338	0.057	3,375		Phosphorous	7723-14-0	0.08		
Silicon dioxide	Trade Secret	Die Attach	0.338	0.057	3,375		Total				100.00
Curing / Hardener	Trade Secret	Die Attach	0.075	0.013	750	0.13	(mg) Total	Die Attach	% of Total Weight	0.75	
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000	84-3J	Epoxy resin	Trade Secret	45	0.75	
Gold	7440-57-5	Wire Bond	0.200	0.034	2,000		Silicon dioxide	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		Curing / Hardener	Trade Secret	10		
			TOTALS:			100.000			17.000	1,000,000	
0.0170 g Total Mass											
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
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						1.28	Total (mg)	Chip (Die)	% of Total Weight	7.5	
						Doped Silicon		7440-21-3	100		
						Total			100.00		
						0.03	(mg) Total	Wire Bond	% of Total Weight	0.2	
						Doped Gold		7440-57-5	100		
						Total			100.00		
						0.21	(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	100.00		
						Total			100.00		
						17.000				100.000	



Semiconductor Device Type: OT 06 (Lead) SOT-23 (6A)			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 e4													
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	7.94 G770HCD	(mg) Total	Mold Compound	% of Total Weight	48.26												
Silica, vitreous (or fused)	60676-86-0	Mold Compound	41.021	6.748	410,210	G770HCD	Silica, vitreous (or fused)	60676-86-0	85.00													
Epoxy Resin	Trade Secret	Mold Compound	4.199	0.691	41,986			Epoxy Resin	Trade Secret		8.70											
Phenolic Resin	Trade Secret	Mold Compound	2.896	0.476	28,956			Phenolic Resin	Trade Secret		6.00											
Carbon Black	1333-86-4	Mold Compound	0.145	0.024	1,448			Carbon Black	1333-86-4		0.30											
Copper	7440-50-8	Lead Frame	48.319	7.949	483,192			Total			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 -)	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			Amine (Trade Secret - 10039)	Imine (Trade Secret - 1003)		4											
Gold	7440-57-5	Plating on external leads (pins)	0.005	0.001	47			Total			100.00											
0.0165 g Total Mass			TOTALS:	100.000	16.450	1,000,000	0.18	Total (mg)	Chip (Die)	% of Total Weight	1.09											
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>						Total		100.00														
						<p>0.02 (mg) Total</p> <p>Wire Bond</p> <p>% of Total Weight</p> <p>0.12</p>						Total		100.00								
												<p>0.07 (mg) Total</p> <p>Plating on external leads (pins)</p> <p>% of Total Weight</p> <p>0.45</p>						Total		100.00		
						<p>16.450</p>												Total		100.00		
																		<p>100.000</p>				



Semiconductor Device Type: CH and OT 06 (Lead) SOT-23 (C8)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm						
Silica, vitreous	60676-86-0	Mold Compound	69.354	11.790	693,542	SG-8300GM	13.57	(mg) Total	Mold Compound	% of Total Weight	79.8
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	1.041	61,207						
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	0.693	40,778						
Carbon Black	1333-86-4	Mold Compound	0.247	0.042	2,474						
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314						
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468	Total 100.00					
Silver	7440-22-4	Lead Frame	0.200	0.034	2,000	194 + Ag	1.79	(mg) Total	Lead Frame	% of Total Weight	10.5
Zinc	7440-66-6	Lead Frame	0.013	0.002	131						
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87						
Epoxy resin	Trade Secret	Die Attach	0.563	0.096	5,625						
Silicon dioxide	Trade Secret	Die Attach	0.169	0.029	1,688						
Curing / Hardener	Polymeric Retaining Agent	Die Attach	0.019	0.003	188	Total 100.00					
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000	8900NC	0.13	(mg) Total	Die Attach	% of Total Weight	0.75
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.033	1,965						
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.001	35						
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.213	12,500						
TOTALS:			100.000	17.000	1,000,000						
0.0170 g Total Mass											
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						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.											Doped Silicon
Total 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'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 concern for any regulatory scheme world-wide.						0.03	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.2	
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/offering/industries/chemicals/plastics/											Copper
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.						Palladium		7440-05-3	2		
Total 100.00											
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Total 100.00											
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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)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, vitreous	60676-86-0	Mold Compound	46.376	24.023	463,760					
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.342	1.731	33,418					
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.342	1.731	33,418					
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.337	0.692	13,367					
Carbon Black	1333-86-4	Mold Compound	0.164	0.085	1,637					
Copper	7440-50-8	Lead Frame	42.275	21.899	422,753					
Iron	7439-89-6	Lead Frame	1.040	0.539	10,399					
Silver	7440-22-4	Lead Frame	0.843	0.437	8,430					
Zinc	7440-66-6	Lead Frame	0.055	0.029	553					
Phosphorous	7723-14-0	Lead Frame	0.037	0.019	365					
Metal oxide	Trade Secret	Die Attach	0.102	0.053	1,023					
Epoxy resins	Trade Secret	Die Attach	0.102	0.053	1,023					
Glycol ethers	Trade Secret	Die Attach	0.078	0.040	775					
Curing / Hardener	Trade Secret	Die Attach	0.028	0.014	279					
Silicon	7440-21-3	Chip (Die)	0.410	0.212	4,100					
Gold	7440-57-5	Wire Bond	0.350	0.181	3,500					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.120	0.062	1,200					
0.0518 g Total Mass			TOTALS:	100.000	51.800	1,000,000				
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/offering/industries/chemicals/plastics/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>										
						28.26	(mg) Total	Mold Compound	% of Total Weight	54.56
						EME-G600	Silica, vitreous	60676-86-0	85.00	
							Epoxy Resin	Trade Secret	6.13	
							Phenolic Resin	Trade Secret	6.13	
							Epoxy, Cresol Novolac	29690-82-2	2.45	
							Carbon Black	1333-86-4	0.30	
							Total		100.00	
						22.92	(mg) Total	Lead Frame	% of Total Weight	44.25
						194+AG	Copper	7440-50-8	95.54	
							Iron	7439-89-6	2.35	
							Silver	7440-22-4	1.91	
							Zinc	7440-66-6	0.13	
							Phosphorous	7723-14-0	0.08	
							Total		100.00	
						0.16	(mg) Total	Die Attach	% of Total Weight	0.31
						8006NS	Metal oxide	Trade Secret	33	
							Epoxy resins	Trade Secret	33	
							Glycol ethers	Trade Secret	25	
							Curing / Hardener	Trade Secret	9	
							Total		100.00	
						0.21	Total (mg)	Chip (Die)	% of Total Weight	0.41
							Doped Silicon	7440-21-3	100	
							Total		100.00	
						0.18	(mg) Total	Wire Bond	% of Total Weight	0.35
							Doped Gold	7440-57-5	100	
							Total		100.00	
						0.06	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.12
							Tin	7440-31-5	100.00	
							Total		100.00	
						51.800				100.000



Semiconductor Device Type: RC 04 (Lead) SOT-143 (F7 / AB)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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	62.57
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	
							Total			
Iron	7439-89-6	Lead Frame	14.095	1.283	140,947	A42+AG	2.40 (mg) Total		26.36	
Nickel	7440-02-0	Lead Frame	11.071	1.007	110,712		Iron	7439-89-6	53.47	
Silver	7440-22-4	Lead Frame	0.502	0.046	5,022		Nickel	7440-02-0	42.00	
Cobalt	7440-48-4	Lead Frame	0.264	0.024	2,636		Silver	7440-22-4	1.91	
Manganese	7439-96-5	Lead Frame	0.211	0.019	2,109		Cobalt	7440-48-4	1.00	
Zinc (Metal)	7440-44-0	Lead Frame	0.132	0.012	1,318		Manganese	7439-96-5	0.80	
Silicon	7440-21-3	Lead Frame	0.079	0.007	791		Zinc (Metal)	7440-44-0	0.50	
Phosphorous	7723-14-0	Lead Frame	0.007	0.001	66		Silicon	7440-21-3	0.30	
Silver (Ag)	7440-22-4	Die Attach	0.259	0.024	2,591		Phosphorous	7723-14-0	0.03	
Proprietary Resin	Trade Secret	Die Attach	0.061	0.006	611		Total			100.00
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.010	0.001	99		0.03 (mg) Total		0.33	
Silicon	7440-21-3	Chip (Die)	4.290	0.390	42,900		84-1LMISR4	0.39 Total (mg)		4.29
Gold	7440-57-5	Wire Bond	0.110	0.010	1,100	Silver (Ag)		7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	6.340	0.577	63,400	Proprietary Resin		Trade Secret	19	
			TOTALS: 100.000 9.100 1,000,000						3	100.00
0.0091 g Total Mass										
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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							0.58 (mg) Total		6.34	
							Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			
							Tin	7440-31-5	100.00	
							Total		100.00	
						9.100			100.000	



Semiconductor Device Type: DB 03 (Lead SOT-223 (F6))				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	56.72	(mg) Total	Mold Compound	% of Total Weight	49.02
Silica, vitreous	60676-86-0	Mold Compound	41.667	48.209	416,670	EME-G600	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.201	1.390	12,010		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.147	0.170	1,471		Carbon Black	1333-86-4	0.30	
							Total			
Copper	7440-50-8	Lead Frame	44.941	51.997	449,408	54.43	(mg) Total	Lead Frame	% of Total Weight	47.04
Iron	7439-89-6	Lead Frame	1.105	1.279	11,054	194+AG	Copper	7440-50-8	95.54	
Silver	7440-22-4	Lead Frame	0.896	1.037	8,961		Iron	7439-89-6	2.35	
Zinc	7440-66-6	Lead Frame	0.059	0.068	588		Silver	7440-22-4	1.91	
Phosphorous	7723-14-0	Lead Frame	0.039	0.045	388		Zinc	7440-66-6	0.13	
Silver (Ag)	7440-22-4	Die Attach	0.502	0.581	5,024		Phosphorous	7723-14-0	0.08	
Proprietary Resin	Trade Secret	Die Attach	0.118	0.137	1,184		Total			
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.019	0.022	192	0.74	(mg) Total	Die Attach	% of Total Weight	0.64
Silicon	7440-21-3	Chip (Die)	1.580	1.828	15,800	84-1LMISR4	Silver (Ag)	7440-22-4	79	
Gold	7440-57-5	Wire Bond	0.150	0.174	1,500	Proprietary Resin	Trade Secret	19		
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 Curing agent & Hardener	Trade Secret	3	Total	
0.1157 g Total Mass			TOTALS: 100.000 115.700 1,000,000						100.00	
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 Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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						1.83	Total (mg)	Chip (Die)	% of Total Weight	1.58
						Doped Silicon		7440-21-3	100	
						Total			100.00	
						0.17	(mg) Total	Wire Bond	% of Total Weight	0.15
						Doped Gold		7440-57-5	100	
						Total			100.00	
						1.82	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.57
						Tin		7440-31-5	100.00	
						Total			100.00	
						115.700				100.000



Semiconductor Device Type: OS 05 (Lead) TSOT (L9)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	7.99	(mg) Total	Mold Compound	% of Total Weight	62.42	
Silica, vitreous	60676-86-0	Mold Compound	53.057	6.791	530,570	EME G-600	Silica, vitreous	60676-86-0	85.00		
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.823	0.489	38,232		Epoxy Resin	Trade Secret	6.13		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.823	0.489	38,232		Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.529	0.196	15,293		Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.187	0.024	1,873		Carbon Black	1333-86-4	0.30		
Copper	7440-50-8	Lead Frame	25.585	3.275	255,849		Total				100.00
Iron	7439-89-6	Lead Frame	0.629	0.081	6,293		3.43	(mg) Total	Lead Frame		% of Total Weight
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		Iron	7439-89-6	2.35		
Phosphorous	7723-14-0	Lead Frame	0.022	0.003	221		Silver	7440-22-4	1.91		
Silver (Ag)	7440-22-4	Die Attach	1.531	0.196	15,308		Zinc	7440-66-6	0.13		
Proprietary Resin	Trade Secret	Die Attach	0.361	0.046	3,608		Phosphorous	7723-14-0	0.08		
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.059	0.007	585	Total			100.00		
Silicon	7440-21-3	Chip (Die)	5.340	0.684	53,400	0.25	(mg) Total	Die Attach	% of Total Weight	1.95	
Gold	7440-57-5	Wire Bond	0.400	0.051	4,000	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	3.110	0.398	31,100		Proprietary Resin	Trade Secret	19		
TOTALS:			100.000	12.800	1,000,000		Proprietary Curing agent & Hardener	Trade Secret	3		
0.0128 g Total Mass											
						0.68	Total (mg)	Chip (Die)	% of Total Weight	5.34	
							Doped Silicon	7440-21-3	100		
						Total			100.00		
						0.05	(mg) Total	Wire Bond	% of Total Weight	0.4	
							Doped Gold	7440-57-5	100		
						Total			100.00		
						0.40	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.11	
							Tin	7440-31-5	100.00		
						Total			100.00		
						12.800				100.000	

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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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/offering/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.

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Semiconductor Device Type: LB 03 (Lead) SC-70 (B2 / BJ)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	4.39	(mg) Total	Mold Compound	% of Total Weight	37.38	
Silica, vitreous	60676-86-0	Mold Compound	67.830	3.731	678,300	EME-G600		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.269	48,878			Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.269	48,878			Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.108	19,551			Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.013	2,394			Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.221	0.562	102,209			Total 100.00			
Iron	1309-37-1	Lead Frame	0.247	0.014	2,468	0.58	(mg) Total	Lead Frame	% of Total Weight	5.68	
Zinc	7440-66-6	Lead Frame	0.013	0.001	131	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
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 with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
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						0.41	Total (mg)	Chip (Die)	% of Total Weight	0.51	
								Doped Silicon	7440-21-3	100	
								Total 100.00			
						0.01	(mg) Total	Wire Bond	% of Total Weight	3	
								Doped Gold	7440-57-5	100	
								Total 100.00			
						0.07	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	52.92	
								Tin	7440-31-5	100.00	
								Total 100.00			
						5.500				100.000	



Semiconductor Device Type: LT 05 (Lead) SC-70 (B4 / B2)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	2.59	(mg) Total	Mold Compound	% of Total Weight	41.18	
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)	Trade Secret	Mold Compound	2.522	0.159	25,223		Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.009	0.064	10,089		Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.124	0.008	1,235		Carbon Black	1333-86-4	0.30		
							Total				100.00
Copper	7440-50-8	Lead Frame	6.630	0.418	66,303	194+AG	0.44	(mg) Total	Lead Frame	% of Total Weight	6.94
Iron	7439-89-6	Lead Frame	0.163	0.010	1,631		Copper	7440-50-8	95.54		
Silver	7440-22-4	Lead Frame	0.132	0.008	1,322		Iron	7439-89-6	2.35		
Zinc	7440-66-6	Lead Frame	0.009	0.001	87		Silver	7440-22-4	1.91		
Phosphorous	7723-14-0	Lead Frame	0.006	0.000	57		Zinc	7440-66-6	0.13		
Silver (Ag)	7440-22-4	Die Attach	0.793	0.050	7,929		Phosphorous	7723-14-0	0.08		
Proprietary Resin	Trade Secret	Die Attach	0.187	0.012	1,869	Total			100.00		
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.030	0.002	303	84-1LMISR4	0.06	(mg) Total	Die Attach	% of Total Weight	1.01
Silicon	7440-21-3	Chip (Die)	1.410	0.089	14,100		Silver (Ag)	7440-22-4	79		
Gold	7440-57-5	Wire Bond	0.930	0.059	9,300	Proprietary Resin	Trade Secret	19			
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 Curing agent & Hardener	Trade Secret	3			
			TOTALS:			100.000			6.300	1,000,000	
0.0063 g Total Mass											
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
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						0.09	Total (mg)	Chip (Die)	% of Total Weight	1.41	
							Doped Silicon	7440-21-3	100		
						Total			100.00		
						0.06	(mg) Total	Wire Bond	% of Total Weight	0.93	
							Doped Gold	7440-57-5	100		
						Total			100.00		
						3.06	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	48.53	
							Tin	7440-31-5	100.00		
						Total			100.00		
						6.300				100.000	



Semiconductor Device Type: LT 06 (Lead) SC-70 (R5)			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	
Basic Substance	CAS Number	"Contained in" Sub-Component	% Total Weight	mg/part	ppm	2.79	(mg) Total	Mold Compound	% of 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	Total 100.00
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					
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	Total 100.00
Zinc	7440-66-6	Lead Frame	0.009	0.001	93		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.006	0.000	61		Silver	7440-22-4	1.91	
Aluminum oxide	1344-28-1	Die Attach	0.424	0.028	4,236		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.770	0.050	7,702		Phosphorous	7723-14-0	0.08	
Amine (Trade Secret - 10039)	(Trade Secret -	Die Attach	0.046	0.003	463					
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	Total 100.00
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	46.310	3.010	463,100		Epoxy resin	Trade Secret	62	
TOTALS:			100.000	6.500	1,000,000		Amine	Trade Secret	4	
0.0065 g Total Mass										

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2.79	(mg) Total	Mold Compound	% of Total Weight	42.97
0.48	(mg) Total	Lead Frame	% of Total Weight	7.41
0.08	(mg) Total	Die Attach	% of Total Weight	1.24
0.12	Total (mg)	Chip (Die)	% of Total Weight	1.86
0.01	(mg) Total	Wire Bond	% of Total Weight	0.21
3.01	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	46.31
6.500	Total		100.00	100.000



Semiconductor Device Type: SS 20 (Lead) SSOP .209" (G3 / GF)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	131.03	(mg) Total	Mold Compound	% of Total Weight	79.8	
Silica, vitreous	60676-86-0	Mold Compound	69.354	113.880	693,542	SG-8300GM	Silica, vitreous	60676-86-0	86.91		
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	10.050	61,207		Epoxy Resin	Trade Secret	7.67		
Phenolic Resin (No Br / CL SbO ₃ , No diantimony trioxide)	Trade Secret	Mold Compound	4.078	6.696	40,778		Phenolic Resin	Trade Secret	5.11		
Carbon Black	1333-86-4	Mold Compound	0.247	0.406	2,474		Carbon Black	1333-86-4	0.31		
Copper	7440-50-8	Lead Frame	10.031	16.472	100,314		Total				100.00
Iron	7439-89-6	Lead Frame	0.247	0.405	2,468	17.24	(mg) Total	Lead Frame	% of Total Weight	10.5	
Silver	7440-22-4	Lead Frame	0.200	0.328	2,000	CDA194+AG	Copper	7440-50-8	95.54		
Zinc	7440-66-6	Lead Frame	0.013	0.022	131		Iron	7439-89-6	2.35		
Phosphorous	7723-14-0	Lead Frame	0.009	0.014	87		Silver	7440-22-4	1.91		
Silver (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		
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.092	563	Total			100.00		
Modified Amine	827-43-0	Die Attach	0.026	0.043	263	1.23	(mg) Total	Die Attach	% of Total Weight	0.75	
Silicon	7440-21-3	Chip (Die)	7.500	12.315	75,000	8390A	Silver (Ag)	7440-22-4	75.00		
Doped Gold	7440-57-5	Wire Bond	0.200	0.328	2,000		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		Diglycidylether of bisphenol-F	54208-63-8	7.50		
TOTALS:			100.000	164.200	1,000,000	Total			100.00		
0.1642 g Total Mass											
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
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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/offering/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.											
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							12.32	(mg) Total	Chip (Die)	% of Total Weight	7.5
Doped Silicon							Doped Silicon	7440-21-3	100		
							Total			100.00	
							0.33	(mg) Total	Wire Bond	% of Total Weight	0.2
							Doped Gold	7440-57-5	100.00		
							Total			100.00	
							2.05	(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	100.00		
							Total			100.00	
							164.200				100.000



Semiconductor Device Type: SS 24 (Lead) SSOP .209" (J2 / JH)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	121.55	(mg) Total	Mold Compound	% of Total Weight	65.17	
Silica, vitreous	60676-86-0	Mold Compound	55.395	103.316	553,945	EME-G600	Silica, vitreous	60676-86-0	85.00		
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.992	7.445	39,917			Epoxy Resin	Trade Secret		6.13
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.992	7.445	39,917			Phenolic Resin	Trade Secret		6.13
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.597	2.978	15,967			Epoxy, Cresol Novolac	29690-82-2		2.45
Carbon Black	1333-86-4	Mold Compound	0.196	0.365	1,955			Carbon Black	1333-86-4		0.30
								Total			100.00
Copper	7440-50-8	Lead Frame	28.222	52.636	282,218	194+AG	(mg) Total	Lead Frame	55.10	29.54	
Iron	7439-89-6	Lead Frame	0.694	1.295	6,942			Copper	7440-50-8		95.54
Silver	7440-22-4	Lead Frame	0.563	1.050	5,627			Iron	7439-89-6		2.35
Zinc	7440-66-6	Lead Frame	0.037	0.069	369			Silver	7440-22-4		1.91
Phosphorous	7723-14-0	Lead Frame	0.024	0.045	244			Zinc	7440-66-6		0.13
Silver	7440-22-4	Die Attach	0.622	1.159	6,216			Phosphorous	7723-14-0		0.08
Epoxy resin	Trade Secret	Die Attach	0.168	0.313	1,680				Total	100.00	
Metal oxide	Trade Secret	Die Attach	0.025	0.047	252	8290	(mg) Total	Die Attach	1.57	0.84	
Gamma-butyrolactone	96-48-0	Die Attach	0.025	0.047	252			Silver	7440-22-4		74
Silicon	7440-21-3	Chip (Die)	2.490	4.644	24,900			Epoxy resin	Trade Secret		20
Gold	7440-57-5	Wire Bond	0.250	0.466	2,500			Metal oxide	Trade Secret		3
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.710	3.189	17,100			Gamma-butyrolactone	96-48-0		3
								Total			100.00
0.1865 g Total Mass											
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
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						4.64	Total (mg)	Chip (Die)	% of Total Weight	2.49	
						Doped Silicon		7440-21-3	100		
						Total			100.00		
						0.47	(mg) Total	Wire Bond	% of Total Weight	0.25	
						Doped Gold		7440-57-5	100		
						Total			100.00		
						3.19	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.71	
						Tin		7440-31-5	100.00		
						Total			100.00		
						186.510				100.000	



Semiconductor Device Type: SS and SI 28 (Lead) SSOP .209" (N2/ ND)			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		
Basic Substance	CAS Number	"Contained in" Sub-Component	% Total Weight	mg/part	ppm	182.90	(mg) Total	Mold Compound	% of 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	Total 100.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	11.203	48.878		Epoxy Resin	Trade Secret	6.13		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	11.203	48.878		Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	4.481	19.551		Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.239	0.549	2.394		Carbon Black	1333-86-4	0.30		
Copper	7440-50-8	Lead Frame	10.031	22.992	100.314		Total		100.00		
Iron	7439-89-6	Lead Frame	0.247	0.566	2.468	24.07	(mg) Total	Lead Frame	% of Total Weight	10.5	
Silver	7440-22-4	Lead Frame	0.200	0.458	2.000	194+AG	Copper	7440-50-8	95.54	Total 100.00	
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	Total 100.00	
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		Diglycidylether of bisphenol-F	54208-63-8	8		
TOTALS:			100.000	229.200	1,000,000		Modified Amine	827-43-0	4		
0.2292 g Total Mass											
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
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						17.19	Total (mg)	Chip (Die)	% of Total Weight	7.5	
						Doped Silicon		7440-21-3	100	Total 100.00	
						0.46	(mg) Total	Wire Bond	% of Total Weight	0.2	
						Doped Gold		7440-57-5	100	Total 100.00	
						2.87	(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	100.00	Total 100.00	
						229.200	Total			100.000	100.000



Semiconductor Device Type: WHE 32 TSOP 8x14mm (W6)					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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	199.26	(mg) Total	Mold Compound	% of Total Weight	79.8		
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	169.372	678.300	EME-G700	Silica, vitreous (or fused)	60676-86-0	85.00	Total	100.00	
Epoxy Resin	Trade Secret	Mold Compound	6.943	17.336	69.426			Epoxy Resin	Trade Secret			8.70
Phenolic Resin	Trade Secret	Mold Compound	4.788	11.956	47.880			Phenolic Resin	Trade Secret			6.00
Carbon Black	1333-86-4	Mold Compound	0.239	0.598	2.394			Carbon Black	1333-86-4			0.30
Copper	7440-50-8	Lead Frame	10.000	24.971	100.003							
Nickel	7440-02-0	Lead Frame	0.267	0.666	2.667	26.22	(mg) Total	Lead Frame	% of Total Weight	10.5		
Silicon	7440-21-3	Lead Frame	0.047	0.118	473	C7025 + Ag	Copper	7440-50-8	95.24	Total	100.00	
Magnesium	7439-95-4	Lead Frame	0.011	0.026	105			Nickel	7440-02-0			2.54
Silver	7440-22-4	Lead Frame	0.175	0.438	1,752			Silicon	7440-21-3			0.45
Silver	7440-22-4	Die Attach	0.600	1.498	6,000			Magnesium	7439-95-4			0.10
Epoxy Resin	Trade Secret	Die Attach	0.128	0.318	1,275			Silver	7440-22-4			1.67
Copper	7440-50-8	Die Attach	0.023	0.056	225	1.87	(mg) Total	Die Attach	% of Total Weight	0.75		
Silicon	7440-21-3	Chip (Die)	7.500	18.728	75,000	8340	Silver	7440-22-4	80.00	Total	100.00	
Doped Gold	7440-57-5	Wire Bond	0.200	0.499	2,000			Epoxy Resin	Trade Secret			17.00
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.121	12,500			Copper	7440-50-8			3.00
0.2497 g Total Mass			TOTALS:	100.000	249.700			1,000,000				
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						18.73	(mg) Total	Chip (Die)	% of Total Weight	7.5		
Doped Silicon						Silicon		7440-21-3	100	Total	100.00	
						0.50	(mg) Total	Wire Bond	% of Total Weight	0.2		
						Doped Gold		7440-57-5	100.00	Total	100.00	
						3.12	(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	100.00	Total	100.00	
						249.700				100.000		



Semiconductor Device Type: EKE 48 TSOP 12x20mm (W9)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous (or fused)	60676-86-0	Mold Compound
Epoxy Resin	Trade Secret	Mold Compound
Phenolic Resin	Trade Secret	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Nickel	7440-02-0	Lead Frame
Silicon	7440-21-3	Lead Frame
Magnesium	7439-95-4	Lead Frame
Silver	7440-22-4	Lead Frame
Silver	7440-22-4	Die Attach
Epoxy Resin	Trade Secret	Die Attach
Copper	7440-50-8	Die Attach
Silicon	7440-21-3	Chip (Die)
Doped Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
TOTALS: 100.000 564.500 1,000,000		
0.5645 g Total Mass		

Termination Base Alloy: Copper Alloy (Cu)
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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)
--

JEDEC 97 Product Marking and/or Pkg. Labeling e3
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377.31 (mg) Total		Mold Compound	% of Total Weight	66.84
EME-G700	Silica, vitreous (or fused)	60676-86-0	85.00	
	Epoxy Resin	Trade Secret	8.70	
	Phenolic Resin	Trade Secret	6.00	
	Carbon Black	1333-86-4	0.30	
	Total			
159.92 (mg) Total		Lead Frame	% of Total Weight	28.33
C7025 + Ag	Copper	7440-50-8	95.24	
	Nickel	7440-02-0	2.54	
	Silicon	7440-21-3	0.45	
	Magnesium	7439-95-4	0.10	
	Silver	7440-22-4	1.67	
Total			100.00	
2.15 (mg) Total		Die Attach	% of Total Weight	0.38
8340	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade Secret	17.00	
	Copper	7440-50-8	3.00	
Total			100.00	
7.79 (mg) Total		Chip (Die)	% of Total Weight	1.38
Doped Silicon	Silicon	7440-21-3	100	
	Total			
1.81 (mg) Total		Wire Bond	% of Total Weight	0.32
Doped Gold	Doped Gold	7440-57-5	100.00	
	Total			
15.52 (mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.75
Tin	Tin	7440-31-5	100.00	
	Total			
564.500		Total		100.000

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Semiconductor Device Type: TO and ZB 03 (Lead) TO-92 (A2 / AU)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, vitreous	60676-86-0	Mold Compound	48.255	96.992	482,545	114.11	EME-G600	85.00	56.77	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.477	6.989	34,772					
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.477	6.989	34,772					
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.391	2.796	13,909					
Carbon Black	1333-86-4	Mold Compound	0.170	0.342	1,703					
Copper	7440-50-8	Lead Frame	38.024	76.428	380,239					
Iron	7439-89-6	Lead Frame	0.935	1.880	9,353	80.00	194+AG	39.8		
Silver	7440-22-4	Lead Frame	0.758	1.524	7,582					
Zinc	7440-66-6	Lead Frame	0.050	0.100	498					
Phosphorous	7723-14-0	Lead Frame	0.033	0.066	328					
Silver	7440-22-4	Die Attach	0.066	0.134	664					
Epoxy Resin	9003-36-5	Die Attach	0.017	0.034	169					
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.006	0.011	57	0.18	CRM-1076DJ	0.09		
Phenolic hardener	92-88-6	Die Attach	0.000	0.001	3					
Butyl cellosolve acetate	112-07-2	Die Attach	0.001	0.001	7					
Silicon	7440-21-3	Chip (Die)	0.800	1.608	8,000					
Gold	7440-57-5	Wire Bond	0.040	0.080	400					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.500	5.025	25,000					
0.2010 g Total Mass			TOTALS:	100.000	201.000	1,000,000				
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 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.										
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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/offering/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.										
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						1.61	Total (mg)	Chip (Die)	% of Total Weight	0.8
							Doped Silicon	7440-21-3	100	
						Total		100.00		
						0.08	(mg) Total	Wire Bond	% of Total Weight	0.04
							Doped Gold	7440-57-5	100	
						Total		100.00		
						5.03	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.5
							Tin	7440-31-5	100.00	
						Total		100.00		
						201.000				100.000



Semiconductor Device Type: AB 03 (Lead) TO-220 (F8)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	536.44	(mg) Total	Mold Compound	% of Total Weight	28.38
Fused Silica	60676-86-0	Mold Compound	24.974	472.066	249,744	CEL-9240HF10	Fused Silica	60676-86-0	88.00	Total 100.00
Epoxy Resin 1	Trade Secret	Mold Compound	0.922	17.434	9,224		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	0.851	16.093	8,514		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.277	24.140	12,771		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.071	1.341	710		Carbon Black	1333-86-4	0.25	
Misc.	Trade Secret	Mold Compound	0.284	5.364	2,838		Undeclared	Trade Secret	1.00	
Copper	7440-50-8	Lead Frame	68.874	1301.860	688,742		Total		100.00	
Tin	7440-31-5	Lead Frame	0.116	2.193	1,160	1329.38	(mg) Total	Lead Frame	% of Total Weight	70.33
Silver	7440-22-4	Lead Frame	1.340	25.325	13,398	HCL-12S + Ag	Copper	7440-50-8	97.93	Total 100.00
Silver (Ag)	7440-22-4	Die Attach	0.063	1.187	628		Tin	7440-31-5	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.015	0.280	148		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	Total 100.00
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.560	10.585	5,600		Proprietary Resin	Trade Secret	19	
TOTALS:			100.000	1,890.200	1,000,000		Proprietary Curing agent & Hardener	Trade Secret	3	
1.8902 g Total Mass										
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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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/offering/industries/chemicals/plastics/										
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						11.34	Total (mg)	Chip (Die)	% of Total Weight	0.6
						Doped Silicon		7440-21-3	100	Total 100.00
						0.95	(mg) Total	Wire Bond	% of Total Weight	0.05
						Doped Gold		7440-57-5	100	Total 100.00
						10.59	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.56
						Tin		7440-31-5	100.00	Total 100.00
						1,890.200	Total			100.00
						100.000				



Semiconductor Device Type: AT 05 (Lead) TO-220 (B8)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	526.92	(mg) Total	Mold Compound	% of 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		Total 100.00			
Tin	7440-31-5	Lead Frame	0.119	2.361	1,190	1430.79	(mg) Total	Lead Frame	% of Total Weight	72.12
Silver	7440-22-4	Lead Frame	1.374	27.257	13,739	HCL-12S + Ag	Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.071	1.402	707		Tin	7440-31-5	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.017	0.330	167		Silver	7440-22-4	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.003	0.054	27		Total 100.00			
Silicon	7440-21-3	Chip (Die)	0.620	12.300	6,200	1.79	(mg) Total	Die Attach	% of Total Weight	0.09
Gold	7440-57-5	Wire Bond	0.040	0.794	400	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	0.570	1,130.8	5,700		Proprietary Resin	Trade Secret	19	
1.9839 g Total Mass			TOTALS:	100.000	1,983.900	1,000.000	Total 100.00			
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>										
						12.30	Total (mg)	Chip (Die)	% of Total Weight	0.62
							Doped Silicon	7440-21-3	100	
						Total 100.00				
						0.79	(mg) Total	Wire Bond	% of Total Weight	0.04
							Doped Gold	7440-57-5	100	
						Total 100.00				
						11.31	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.57
							Tin	7440-31-5	100.00	
						Total 100.00				
						1,983.900				100.000



Semiconductor Device Type: PT 32 (Lead) TQFP 7x7x1mm (T5)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	229.469	678,300	269.96 (mg) Total			79.8	
Epoxy Resin	Trade Secret	Mold Compound	6.943	23.487	69,426	EME-G700 Silica, vitreous (or fused) 60676-86-0 85.00				
Phenolic Resin	Trade Secret	Mold Compound	4.788	16.198	47,880	Epoxy Resin Trade Secret 8.70				
Carbon Black	1333-86-4	Mold Compound	0.239	0.810	2,394	Phenolic Resin Trade Secret 6.00				
Copper	7440-50-8	Lead Frame	10.229	34.603	102,286	Carbon Black 1333-86-4 0.30				
Tin	7440-31-5	Lead Frame	0.026	0.089	263	Total 100.00				
Silver	7440-22-4	Lead Frame	0.200	0.677	2,000	35.52 (mg) Total			10.5	
Zinc	7440-66-6	Lead Frame	0.019	0.064	189	EFTEC64T + Lead Frame 7440-31-5 97.42				
Chromium	7440-47-3	Lead Frame	0.026	0.089	263	Aa Copper 7440-50-8 97.42				
Silver (Ag)	7440-22-4	Die Attach	0.623	2.106	6,225	Tin 7440-31-5 0.25				
ANHYDRIDE	Trade Secret	Die Attach	0.068	0.228	675	Silver 7440-22-4 1.91				
EPOXY RESIN	Trade Secret	Die Attach	0.060	0.203	600	Zinc 7440-66-6 0.18				
Silicon	7440-21-3	Chip (Die)	7.500	25.373	75,000	Chromium 7440-47-3 0.25				
Gold	7440-57-5	Wire Bond	0.200	0.677	2,000	Total 100.00				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.229	12,500	2.54 (mg) Total			0.75	
0.3383 g Total Mass			TOTALS:	100.000	338.300	1,000,000	3230			

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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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/offering/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.

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269.96 (mg) Total		Mold Compound	% of Total Weight	79.8
EME-G700 Silica, vitreous (or fused) 60676-86-0 85.00				
Epoxy Resin Trade Secret 8.70				
Phenolic Resin Trade Secret 6.00				
Carbon Black 1333-86-4 0.30				
Total 100.00				
35.52 (mg) Total		Lead Frame	% of Total Weight	10.5
EFTEC64T + Aa				
Copper 7440-50-8 97.42				
Tin 7440-31-5 0.25				
Silver 7440-22-4 1.91				
Zinc 7440-66-6 0.18				
Chromium 7440-47-3 0.25				
Total 100.00				
2.54 (mg) Total		Die Attach	% of Total Weight	0.75
3230				
Silver (Ag) 7440-22-4 83				
ANHYDRIDE Trade Secret 9				
EPOXY RESIN Trade Secret 8				
Total 100.00				
25.37 Total (mg)		Chip (Die)	% of Total Weight	7.5
Doped Silicon		7440-21-3	100	
Total 100.00				
0.68 (mg) Total		Wire Bond	% of Total Weight	0.2
Doped Gold		7440-57-5	100	
Total 100.00				
4.23 (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	100.00	
Total 100.00				
338.300		100.000		



Semiconductor Device Type: PT 44 (Lead) TQFP 10x10x1mm (T4)				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		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total 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			
						Total			100.00			
Copper	7440-50-8	Lead Frame	10.000	27.331	100.003	C7025 + Ag	28.70 (mg) Total					
Nickel	7440-02-0	Lead Frame	0.267	0.729	2.667		Lead Frame	% of Total Weight	10.5			
Silver	7440-22-4	Lead Frame	0.175	0.479	1.752		Copper	7440-50-8	95.24			
Silicon	7440-21-3	Lead Frame	0.047	0.129	473		Nickel	7440-02-0	2.54			
Magnesium	7439-95-4	Lead Frame	0.011	0.029	105		Silver	7440-22-4	1.67			
Silver (Ag)	7440-22-4	Die Attach	0.600	1.640	6,000	Silicon	7440-21-3	0.45				
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.410	1,500	Magnesium	7439-95-4	0.10				
						Total			100.00			
Silicon	7440-21-3	Chip (Die)	7.500	20.498	75,000	3280	2.05 (mg) Total					
Gold	7440-57-5	Wire Bond	0.200	0.547	2,000		Silver (Ag)	7440-22-4	80			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.416	12,500				% of Total Weight	0.75		
0.2733 g Total Mass						TOTALS:			100.000	273.300	1,000,000	
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>												
						20.50			Total (mg)	Chip (Die)	% of Total Weight	7.5
									Doped Silicon	7440-21-3	100	
						Total			100.00			
						0.55			(mg) Total	Wire Bond	% of Total Weight	0.2
									Doped Gold	7440-57-5	100	
						Total			100.00			
						3.42			(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	100.00	
						Total			100.00			
						273.300					100.000	



Semiconductor Device Type: PT 64 (Lead) TQFP 10x10x1mm (V2)			Termination Base Alloy: Copper Alloy (Cu)		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	69.354	198.838	693.542
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	17.548	61.207
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	11.691	40.778
Carbon Black	1333-86-4	Mold Compound	0.247	0.709	2.474
Copper	7440-50-8	Lead Frame	10.000	28.671	100.003
Nickel	7440-02-0	Lead Frame	0.267	0.765	2,667
Silver	7440-22-4	Lead Frame	0.175	0.502	1,752
Silicon	7440-21-3	Lead Frame	0.047	0.135	473
Magnesium	7439-95-4	Lead Frame	0.011	0.030	105
Silver (Ag)	7440-22-4	Die Attach	0.600	1.720	6,000
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.430	1,500
Silicon	7440-21-3	Chip (Die)	7.500	21.503	75,000
Gold	7440-57-5	Wire Bond	0.200	0.573	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.584	12,500
0.2867 g Total Mass			TOTALS:	100.000	286.700

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
228.79	(mg) Total	Mold Compound	% of Total Weight	79.8
SG-8300ECM	Silica, vitreous	60676-86-0	86.91	
	Epoxy Resin	Trade Secret	7.67	
	Phenolic Resin	Trade Secret	5.11	
	Carbon Black	1333-86-4	0.31	
	Total			
30.10	(mg) Total	Lead Frame	% of Total Weight	10.5
C7025 + Ag	Copper	7440-50-8	95.24	
	Nickel	7440-02-0	2.54	
	Silver	7440-22-4	1.67	
	Silicon	7440-21-3	0.45	
	Magnesium	7439-95-4	0.10	
Total			100.00	
2.15	(mg) Total	Die Attach	% of Total Weight	0.75
3280	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligomer	General	20	
Total			100.00	
21.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
Total			100.00	
0.57	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
Total			100.00	
3.58	(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	100.00	
Total			100.00	
286.700			100.000	

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 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.

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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/offering/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.

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Semiconductor Device Type: PT 64 (Lead) TQFP 14x14x1mm (V3 / VH)				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
				289.33	(mg) Total	Mold Compound	% of Total Weight	53.58		
				EME-G700	Silica, vitreous (or fused)	60676-86-0	85.00			
					Epoxy Resin	Trade Secret	8.70			
					Phenolic Resin	Trade Secret	6.00			
					Carbon Black	1333-86-4	0.30			
					Total			100.00		
				179.50	(mg) Total	Lead Frame	% of Total Weight	33.24		
				EFTEC64T + Ag	Copper	7440-50-8	97.42			
					Tin	7440-31-5	0.25			
					Silver	7440-22-4	1.91			
					Zinc	7440-66-6	0.18			
					Chromium	7440-47-3	0.25			
					Total			100.00		
				7.34	(mg) Total	Die Attach	% of Total Weight	1.36		
				3230	Silver (Ag)	7440-22-4	83			
					ANHYDRIDE	Trade Secret	9			
					EPOXY RESIN	Trade Secret	8			
					Total			100.00		
				56.92	Total (mg)	Chip (Die)	% of Total Weight	10.54		
					Doped Silicon	7440-21-3	100			
					Total			100.00		
				1.84	(mg) Total	Wire Bond	% of Total Weight	0.34		
					Doped Gold	7440-57-5	100			
					Total			100.00		
				5.08	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.94		
					Tin	7440-31-5	100.00			
					Total			100.00		
				540.000	Total			100.00	100.000	
				0.5400 g Total Mass						
				TOTALS: 100.000 540.000 1,000,000						

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: PT 80 (Lead) TQFP 12x12x1mm (X2)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	292.63	(mg) Total	Mold Compound	% of Total Weight	79.8	
Silica, vitreous	60676-86-0	Mold Compound	69.354	254.322	693,542	SG-8300ECM	Silica, vitreous	60676-86-0	86.91	Total 100.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	22.444	61,207		Epoxy Resin	Trade Secret	7.67		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	14.953	40,778		Phenolic Resin	Trade Secret	5.11		
Carbon Black	1333-86-4	Mold Compound	0.247	0.907	2,474		Carbon Black	1333-86-4	0.31		
Copper	7440-50-8	Lead Frame	10.000	36.671	100,003						
Nickel	7440-02-0	Lead Frame	0.267	0.978	2,667	38.50	(mg) Total	Lead Frame	% of Total Weight	10.5	
Silver	7440-22-4	Lead Frame	0.175	0.643	1,752	C7025+ Ag	Copper	7440-50-8	95.24	Total 100.00	
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	2.75	(mg) Total	Die Attach	% of Total Weight	0.75	
Gold	7440-57-5	Wire Bond	0.200	0.733	2,000	3280	Silver (Ag)	7440-22-4	80	Total 100.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.584	12,500		Acrylate Urethane Oligomer	General	20		
0.3667 g Total Mass			TOTALS:	100.000	366.700	1,000,000	27.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
								Doped Silicon	7440-21-3	100	Total 100.00
							0.73	(mg) Total	Wire Bond	% of Total Weight	0.2
								Doped Gold	7440-57-5	100	Total 100.00
							4.58	(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	100.00	Total 100.00
							366.700				100.000

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: PF 80 (Lead) TQFP 14x14mm (X3/XE)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	306.01	(mg) Total	Mold Compound	% of 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		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	
			Total				100.00			
Copper	7440-50-8	Lead Frame	31.426	167.187	314.261	171.62	(mg) Total	Lead Frame	% of Total Weight	32.26
Tin	7440-31-5	Lead Frame	0.081	0.429	807					
			Total				100.00			
Silver	7440-22-4	Lead Frame	0.615	3.269	6.146	EFTEC64T + Ag	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			
0.5320 g Total Mass										
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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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/offering/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.										
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						40.70	Total (mg)	Chip (Die)	% of Total Weight	7.65
							Doped Silicon	7440-21-3	100	
						Total			100.00	
						1.97	(mg) Total	Wire Bond	% of Total Weight	0.37
							Doped Gold	7440-57-5	100	
						Total			100.00	
						6.38	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.2
							Tin	7440-31-5	100.00	
						Total			100.00	
						532.000				100.000



Semiconductor Device Type: PF 100 (Lead) TQFP 12x12x1mm (V7)			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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	312.02	(mg) Total	Mold Compound	% of 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	
							Total			
Copper	7440-50-8	Lead Frame	10.000	39.101	100,003	41.06 (mg) Total		Lead Frame	% of Total Weight	10.5
Nickel	7440-02-0	Lead Frame	0.267	1.043	2,667	C7025	Copper	7440-50-8	95.24	
Silver	7440-22-4	Lead Frame	0.175	0.685	1,752		Nickel	7440-02-0	2.54	
Silicon	7440-21-3	Lead Frame	0.047	0.185	473		Silver	7440-22-4	1.67	
Magnesium	7439-95-4	Lead Frame	0.011	0.041	105		Silicon	7440-21-3	0.45	
Silver (Ag)	7440-22-4	Die Attach	0.600	2.346	6,000		Magnesium	7439-95-4	0.10	
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.587	1,500	2.93 (mg) Total		Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	29.325	75,000	3280	Silver (Ag)	7440-22-4	80	
Gold	7440-57-5	Wire Bond	0.200	0.782	2,000		Acrylate Urethane Oligomer	General	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.888	12,500	2.93 (mg) Total		Die Attach	% of Total Weight	0.75
TOTALS:			100.000	391.000	1,000,000	Total			100.00	
0.3910 g Total Mass										
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						29.33	Total (mg)	Chip (Die)	% of Total Weight	7.5
							Doped Silicon	7440-21-3	100	
						Total			100.00	
						0.78	(mg) Total	Wire Bond	% of Total Weight	0.2
							Doped Gold	7440-57-5	100	
						Total			100.00	
						4.89	(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	100.00	
						Total			100.00	
						391.000				100.000



Semiconductor Device Type: PF 100 (Lead) TQFP 14x14mm (X5 / EQ)			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							
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight								
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	68.34						
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	Trade Secret	6.00							
Carbon Black	1333-86-4	Mold Compound	0.205	1.019	2.050		Carbon Black	1333-86-4	0.30							
			Total				100.00									
Copper	7440-50-8	Lead Frame	26.156	129.995	261.559	133.44	(mg) Total	Lead Frame	% of Total Weight	26.85						
Tin	7440-31-5	Lead Frame	0.067	0.334	671											
			Total								100.00					
Silver	7440-22-4	Lead Frame	0.511	2.542	5.115	EFTEC64T + Ag	Copper	7440-50-8	97.42							
Zinc	7440-66-6	Lead Frame	0.048	0.240	483						Tin	7440-31-5	0.25			
Chromium	7440-47-3	Lead Frame	0.067	0.334	671						Silver	7440-22-4	1.91			
Silver (Ag)	7440-22-4	Die Attach	0.481	2.393	4.814						Zinc	7440-66-6	0.18			
ANYDRIDE	Trade Secret	Die Attach	0.052	0.259	522						Chromium	7440-47-3	0.25			
EPOXY RESIN			Trade Secret			Total			100.00							
Silicon	7440-21-3	Chip (Die)	2.710	13.469	27.100	2.88	(mg) Total	Die Attach	% of Total Weight	0.58						
Gold	7440-57-5	Wire Bond	0.420	2.087	4.200											
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100	5.467	11.000	3230	Silver (Ag)	7440-22-4	83							
			TOTALS:								100.000			497.000		
			0.4970 g Total Mass													
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 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.																
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						Total		100.00								
						497.000		100.000								
						Total (mg)		Chip (Die)		% of Total Weight						
						13.47		2.71								
						Doped Silicon		7440-21-3		100						
						Total		100.00								
						(mg) Total		Wire Bond		% of Total Weight						
						2.09		0.42								
						Doped Gold		7440-57-5		100						
						Total		100.00								
						(mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		% of Total Weight						
						5.47		1.1								
						Tin		7440-31-5		100.00						
						Total		100.00								



Semiconductor Device Type: **ST 08** (Lead) **TSSOP** 4.4mm (C5 / CN / A4)

Basic Substance	CAS Number	"Contained In" Sub-Component	Termination Base Alloy: Copper Alloy (Cu)		
			% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	50.201	16.566	502,010
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.617	1.194	36,174
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.617	1.194	36,174
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.447	0.478	14,470
Carbon Black	1333-86-4	Mold Compound	0.177	0.058	1,772
Copper	7440-50-8	Lead Frame	30.020	9.907	300,200
Nickel	7440-02-0	Lead Frame	0.801	0.264	8,006
Silver	7440-22-4	Lead Frame	0.526	0.174	5,261
Silicon	7440-21-3	Lead Frame	0.142	0.047	1,418
Magnesium	7439-95-4	Lead Frame	0.032	0.010	315
Silver	7440-22-4	Die Attach	0.840	0.277	8,400
Diester Resin	94-80-4	Die Attach	0.168	0.055	1,680
Functionalized Urethane Resin	72869-86-4	Die Attach	0.056	0.018	560
Epoxy Resin	9003-36-5	Die Attach	0.028	0.009	280
Epoxy Resin	13561-08-5	Die Attach	0.028	0.009	280
Silicon	7440-21-3	Chip (Die)	6.300	2.079	63,000
Gold	7440-57-5	Wire Bond	0.180	0.059	1,800
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.820	0.601	18,200
TOTALS:			100.000	33.000	1,000,000

0.0330 g Total Mass

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 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.

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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.

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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
19.49	(mg) Total	Mold Compound	59.06
EME-G600	Silica, vitreous	60676-86-0	85.00
	Epoxy Resin	Trade Secret	6.13
	Phenolic Resin	Trade Secret	6.13
	Epoxy, Cresol Novolac	29690-82-2	2.45
	Carbon Black	1333-86-4	0.30
Total			100.00
10.40	(mg) Total	Lead Frame	31.52
C7025	Copper	7440-50-8	95.24
	Nickel	7440-02-0	2.54
	Silver	7440-22-4	1.67
	Silicon	7440-21-3	0.45
	Magnesium	7439-95-4	0.10
Total			100.00
0.37	(mg) Total	Die Attach	1.12
Z200D	Silver	7440-22-4	75
	Diester Resin	94-80-4	15
	Functionalized Urethane Resin	72869-86-4	5
	Epoxy Resin	9003-36-5	3
	Epoxy Resin	13561-08-5	3
Total			100.00
2.08	Total (mg)	Chip (Die)	6.3
Doped Silicon		7440-21-3	100
Total			100.00
0.06	(mg) Total	Wire Bond	0.18
Doped Gold		7440-57-5	100
Total			100.00
0.60	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.82
Tin		7440-31-5	100.00
Total			100.00

33.000 mg

100.000



Semiconductor Device Type: ST 14 (Lead) TSSOP 4.4mm (D4 / DH)				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				
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	28.10	(mg) Total	Mold Compound	% of 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					
							Total				100.00			
Copper	7440-50-8	Lead Frame	43.249	25.949	432,489	C7025+Ag								
Nickel	7440-02-0	Lead Frame	1.153	0.692	11,534									
Silver	7440-22-4	Lead Frame	0.758	0.455	7,579									
Silicon	7440-21-3	Lead Frame	0.204	0.123	2,043									
Magnesium	7439-95-4	Lead Frame	0.045	0.027	454									
Silver	7440-22-4	Die Attach	1.214	0.728	12,136				27.25	(mg) Total	Lead Frame	% of Total Weight	45.41	
Epoxy resin	Trade Secret	Die Attach	0.328	0.197	3,280									
Metal oxide	Trade Secret	Die Attach	0.049	0.030	492									
Gamma-butyrolactone	96-48-0	Die Attach	0.049	0.030	492									
						Total								100.00
Silicon	7440-21-3	Chip (Die)	3.340	2.004	33,400	8290				0.98	(mg) Total	Die Attach	% of Total Weight	1.64
Gold	7440-57-5	Wire Bond	0.490	0.294	4,900									
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.280	1.368	22,800									
0.0600 g Total Mass														
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/offering/industries/chemicals/plastics/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>														
						2.00			Total (mg)	Chip (Die)	% of Total Weight	3.34		
									Doped Silicon	7440-21-3	100			
									Total			100.00		
						0.29			(mg) Total	Wire Bond	% of Total Weight	0.49		
									Doped Gold	7440-57-5	100			
									Total			100.00		
						1.37			(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.28		
									Tin	7440-31-5	100.00			
									Total			100.00		
						60.000						100.000		



Semiconductor Device Type: ST 20 (Lead) TSSOP 4.4mm (G2 / GE)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous (or fused)	60676-86-0	Mold Compound
Epoxy Resin	Trade Secret	Mold Compound
Phenolic Resin	Trade Secret	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Nickel	7440-02-0	Lead Frame
Silver	7440-22-4	Lead Frame
Silicon	7440-21-3	Lead Frame
Magnesium	7439-95-4	Lead Frame
Silver	7440-22-4	Die Attach
Epoxy resin	Trade Secret	Die Attach
Metal oxide	Trade Secret	Die Attach
Gamma-butyrolactone	96-48-0	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
TOTALS: 100.000 78.000 1,000,000		
0.0780 g Total Mass		

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
40.562	31.638	405,620
4.152	3.238	41,516
2.863	2.233	28,632
0.143	0.112	1,432
40.725	31.766	407,251
1.086	0.847	10,861
0.714	0.557	7,137
0.192	0.150	1,924
0.043	0.033	428
1.317	1.027	13,172
0.356	0.278	3,560
0.053	0.042	534
0.053	0.042	534
4.690	3.658	46,900
0.540	0.421	5,400
2.510	1.958	25,100

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
37.22	(mg) Total	Mold Compound	% of Total Weight	47.72
EME-G700	Silica, vitreous (or fused)	60676-86-0	85.00	
	Epoxy Resin	Trade Secret	8.70	
	Phenolic Resin	Trade Secret	6.00	
	Carbon Black	1333-86-4	0.30	
	Total			
C7025+ Ag	33.35 (mg) Total Lead Frame % of Total Weight 42.76			
	Copper	7440-50-8	95.24	
	Nickel	7440-02-0	2.54	
	Silver	7440-22-4	1.67	
	Silicon	7440-21-3	0.45	
	Magnesium	7439-95-4	0.10	
Total			100.00	
8290	1.39 (mg) Total Die Attach % of Total Weight 1.78			
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
Total			100.00	
	3.66 Total (mg) Chip (Die) % of Total Weight 4.69			
	Doped Silicon	7440-21-3	100	
Total			100.00	
	0.42 (mg) Total Wire Bond % of Total Weight 0.54			
	Doped Gold	7440-57-5	100	
Total			100.00	
	1.96 (mg) Total Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour % of Total Weight 2.51			
	Tin	7440-31-5	100.00	
Total			100.00	
78.000				100.000

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Semiconductor Device Type: QU8E 08 (Lead) USON/UDFN 2x2x0.55mm (QN)				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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	9.40 (mg) Total		Mold Compound	% of 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		
						Total		100.00			
Copper	7440-50-8	Lead Frame	20.505	2.563	205,054	C7025 + Ag	2.69 (mg) Total		Lead Frame	% of Total Weight	21.53
Nickel	7440-02-0	Lead Frame	0.547	0.068	5,469		Copper	7440-50-8	95.24		
Silicon	7440-21-3	Lead Frame	0.097	0.012	969		Nickel	7440-02-0	2.54		
Magnesium	7439-95-4	Lead Frame	0.022	0.003	215		Silicon	7440-21-3	0.45		
Silver	7440-22-4	Lead Frame	0.359	0.045	3,593		Magnesium	7439-95-4	0.10		
Silver	7440-22-4	Die Attach	0.800	0.100	8,000		Silver	7440-22-4	1.67		
Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2,000	Total		100.00			
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900	8352L	0.13 (mg) Total		Die Attach	% of Total Weight	1.00
Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100		Silver	7440-22-4	80.00		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.890	0.111	8,900		Epoxy Resin	Trade secret	20.00		
0.0125 g Total Mass			TOTALS:			100.000	12.500	1,000.000			
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						0.14 (mg) Total		Chip (Die)	% of Total Weight	1.09	
Doped GaAs						Gallium arsenide	1303-00-0	100			
						Total		100.00			
						0.04 (mg) Total		Wire Bond	% of Total Weight	0.31	
						Doped Gold	7440-57-5	100.00			
						Total		100.00			
						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			
						Total		100.00			
						12.500				100.000	



Semiconductor Device Type: QUAE 08 (Lead) USON 2x2x0.55mm (UA)			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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	9.40 (mg) Total	Mold Compound	% of Total Weight	75.18
Silica, fused	60676-86-0	Mold Compound	67.662	8.458	676,620	EME G77OHT	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
							Total 100.00		
Copper	7440-50-8	Lead Frame	20.505	2.563	205,054	2.69 (mg) Total	Lead Frame	% of Total Weight	21.53
Nickel	7440-02-0	Lead Frame	0.547	0.068	5,469	C7025 + Ag	Copper	7440-50-8	95.24
Silicon	7440-21-3	Lead Frame	0.097	0.012	969		Nickel	7440-02-0	2.54
Magnesium	7439-95-4	Lead Frame	0.022	0.003	215		Silicon	7440-21-3	0.45
Silver	7440-22-4	Lead Frame	0.359	0.045	3,593		Magnesium	7439-95-4	0.10
Silver	7440-22-4	Die Attach	0.800	0.100	8,000		Silver	7440-22-4	1.67
Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2,000	Total 100.00			
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900	0.13 (mg) Total	Die Attach	% of Total Weight	1.00
Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100	8352L	Silver	7440-22-4	80.00
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.890	0.111	8,900		Epoxy Resin	Trade secret	20.00
0.0125 g Total Mass			TOTALS: 100.000 12.500 1,000,000			Total 100.00			
<p>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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>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 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 concern for any regulatory scheme world-wide.</p> <p>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/</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>									
						0.14 (mg) Total	Chip (Die)	% of Total Weight	1.09
						Doped GaAs	Gallium arsenide	1303-00-0	100
						Total 100.00			
						0.04 (mg) Total	Wire Bond	% of Total Weight	0.31
						Doped Gold	7440-57-5	100.00	
						Total 100.00			
						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	
						Total 100.00			
						12.500			100.000



Semiconductor Device Type: QX6E 06 (Lead) XSON 1.5x1.5x0.45mm (QX)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, fused	60676-86-0	Mold Compound	61.695	3.763	616.950	4.18 (mg) Total	Mold Compound	% of Total Weight	68.55	
Epoxy Resin	Trade Secret	Mold Compound	3.325	0.203	33.247					
Phenolic Resin	Trade Secret	Mold Compound	3.325	0.203	33.247					
Carbon Black	1333-86-4	Mold Compound	0.206	0.013	2.057					
Copper	7440-50-8	Lead Frame	23.696	1.445	236.960					
Nickel	7440-02-0	Lead Frame	0.632	0.039	6.320	1.52 (mg) Total	Lead Frame	% of Total Weight	24.88	
Silicon	7440-21-3	Lead Frame	0.112	0.007	1.120					
Magnesium	7439-95-4	Lead Frame	0.025	0.002	249					
Silver	7440-22-4	Lead Frame	0.415	0.025	4.152					
Ag	7440-22-4	Die Attach	0.990	0.060	9.900					
Epoxy resin	Trade secret	Die Attach	0.198	0.012	1,980	0.08 (mg) Total	Die Attach	% of Total Weight	1.32	
Aliphatic anhydride	Trade secret	Die Attach	0.066	0.004	660					
2-Butoxyethyl acetate	112-07-2	Die Attach	0.033	0.002	330					
Polymeric material	Trade secret	Die Attach	0.033	0.002	330					
Silicon	1303-00-0	Chip (Die)	3.630	0.221	36,300					
Au	7440-57-5	Wire Bond	0.590	0.036	5,899	0.22 (mg) Total	Chip (Die)	% of Total Weight	3.63	
impurity	Misc.	Wire Bond	0.000	0.000	1					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.030	0.063	10,300					
TOTALS:			100.000	6.100	1,000,000					
0.0061 g Total Mass										

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 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.

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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/offering/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.

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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	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm			
TOTALS:						100.000	6.100	1,000,000
0.0061 g Total Mass								
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).								
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4.18 (mg) Total						Mold Compound	% of Total Weight	68.55
G770HT						Silica, fused	60676-86-0	90.00
						Epoxy Resin	Trade Secret	4.85
						Phenolic Resin	Trade Secret	4.85
						Carbon Black	1333-86-4	0.30
						Total	100.00	
1.52 (mg) Total						Lead Frame	% of Total Weight	24.88
C7025 + Ag						Copper	7440-50-8	95.24
						Nickel	7440-02-0	2.54
						Silicon	7440-21-3	0.45
						Magnesium	7439-95-4	0.10
						Silver	7440-22-4	1.67
						Total	100.00	
0.08 (mg) Total						Die Attach	% of Total Weight	1.32
8352L						Ag	7440-22-4	75.00
						Epoxy resin	Trade secret	15.00
						Aliphatic anhydride	Trade secret	5.00
						2-Butoxyethyl acetate	112-07-2	2.50
						Polymeric material	Trade secret	3
						Total	100.00	
0.22 (mg) Total						Chip (Die)	% of Total Weight	3.63
Doped GaAs						GaAs	1303-00-0	100
						Total	100.00	
0.04 (mg) Total						Wire Bond	% of Total Weight	0.59
						Au	7440-57-5	99.99
						impurity	Misc.	0.01
						Total	100.00	
0.06 (mg) Total						Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.03
						Tin	7440-31-5	100.00
						Total	100.00	
						6.100		100.000



Semiconductor Device Type: QX8E 08 (Lead) XSON 2x2x0.45mm (Q7)				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
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	8.14	(mg) Total	Mold Compound	% of Total Weight	79.8
Silica, fused	60676-86-0	Mold Compound	71.820	7.326	718.200	G770HT		Silica, fused	60676-86-0	90.00
Epoxy Resin	Trade Secret	Mold Compound	3.870	0.395	38.703			Epoxy Resin	Trade Secret	4.85
Phenolic Resin	Trade Secret	Mold Compound	3.870	0.395	38.703			Phenolic Resin	Trade Secret	4.85
Carbon Black	1333-86-4	Mold Compound	0.239	0.024	2.394			Carbon Black	1333-86-4	0.30
Copper	7440-50-8	Lead Frame	10.000	1.020	100.003			Total		
Nickel	7440-02-0	Lead Frame	0.267	0.027	2.667	1.07	(mg) Total	Lead Frame	% of Total Weight	10.5
Silicon	7440-21-3	Lead Frame	0.047	0.005	473	C7025 + Ag		Copper	7440-50-8	95.24
Magnesium	7439-95-4	Lead Frame	0.011	0.001	105			Nickel	7440-02-0	2.54
Silver	7440-22-4	Lead Frame	0.175	0.018	1,752			Silicon	7440-21-3	0.45
Ag	7440-22-4	Die Attach	0.563	0.057	5,625			Magnesium	7439-95-4	0.10
Epoxy resin	Trade secret	Die Attach	0.113	0.011	1,125			Silver	7440-22-4	1.67
Aliphatic anhydride	Trade secret	Die Attach	0.038	0.004	375	Total			100.00	
2-Butoxyethyl acetate	112-07-2	Die Attach	0.019	0.002	188	0.08	(mg) Total	Die Attach	% of Total Weight	0.75
Polymeric material	Trade secret	Die Attach	0.019	0.002	188	8352L		Ag	7440-22-4	75.00
GaAs	1303-00-0	Chip (Die)	7.500	0.765	75,000			Epoxy resin	Trade secret	15.00
Gold	7440-57-5	Wire Bond	0.200	0.020	2,000			Aliphatic anhydride	Trade secret	5.00
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.128	12,500			2-Butoxyethyl acetate	112-07-2	2.50
TOTALS:			100.000	10.200	1,000,000			Total		
0.0102 g Total Mass										
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						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.						Doped GaAs		GaAs	1303-00-0	100
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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/						0.02	(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 Gold		Gold	7440-57-5	100.00
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								Total		
						10.200				100.000



Semiconductor Device Type: XX8E 08 (Lead) X2SON 2x2x0.35mm (X8)			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		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm						
Silica, fused	60676-86-0	Mold Compound	46.791	2.574	467.910	2.86 (mg) Total		Mold Compound	% of Total Weight	51.99	
Epoxy Resin	Trade Secret	Mold Compound	2.522	0.139	25.215	EME G770HJ	Silica, fused	60676-86-0	90.00		
Phenolic Resin	Trade Secret	Mold Compound	2.522	0.139	25.215		Epoxy Resin	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.156	0.009	1,560		Phenolic Resin	Trade Secret	4.85		
Copper	7440-50-8	Lead Frame	38.649	2.126	386.488		Carbon Black	1333-86-4	0.30		
Nickel	7440-02-0	Lead Frame	1.031	0.057	10.307	Total		100.00			
Silicon	7440-21-3	Lead Frame	0.183	0.010	1.826	2.23 (mg) Total		Lead Frame	% of Total Weight	40.58	
Magnesium	7439-95-4	Lead Frame	0.041	0.002	406	C7025 + Ag	Copper	7440-50-8	95.24		
Silver	7440-22-4	Lead Frame	0.677	0.037	6.773		Nickel	7440-02-0	2.54		
Silver	7440-22-4	Die Attach	1.888	0.104	18.880		Silicon	7440-21-3	0.45		
Epoxy Resin	Trade secret	Die Attach	0.472	0.026	4.720		Magnesium	7439-95-4	0.10		
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.360	0.130	23.600		Silver	7440-22-4	1.67		
Doped Gold	7440-57-5	Wire Bond	0.720	0.040	7.200	Total		100.00			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.990	0.109	19.900	0.13 (mg) Total		Die Attach	% of Total Weight	2.36	
0.0055 g Total Mass			TOTALS:	100.000	5.500	1,000,000	8352L	Silver	7440-22-4	80.00	
								Epoxy Resin	Trade secret	20.00	
							Total		100.00		
							0.13 (mg) Total		Chip (Die)	% of Total Weight	2.36
							Doped GaAs	Gallium arsenide	1303-00-0	100	
						Total		100.00			
							0.04 (mg) Total		Wire Bond	% of Total Weight	0.72
							Doped Gold	7440-57-5	100.00		
						Total		100.00			
							0.11 (mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.99
							Tin	7440-31-5	100.00		
						Total		100.00			
							5.500				100.000

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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: B3KE 48 TFBGA 6x8x1.2mm (8T)				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 e1
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	47.33 (mg) Total	Mold Compound	% of Total Weight	50.3	
FUSED 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 EPOXY / 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		CARBON BLACK	1333-86-4	0.50	
Copper	7440-50-8	Lead Frame	8.052	7.577	80,524		Total 100.00			
Glass fibers	65997-17-3	Lead Frame	4.800	4.517	48,000	21.11 (mg) Total	Lead Frame	% of Total Weight	22.43	
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	4.800	4.517	48,000	BT Substrate + Solder Mask (AUS308)	Copper	7440-50-8	35.90	
Silica, chemically prepared	7631-86-9	Lead Frame	1.794	1.689	17,944		Glass fibers	65997-17-3	21.40	
Nickel	7440-02-0	Lead Frame	0.875	0.823	8,748		Phenol, polymer	9003-36-5	21.40	
Barite	7727-43-7	Lead Frame	0.561	0.528	5,608		Silica, chemically prepared	7631-86-9	8.00	
Magnesium silicate	14807-96-6	Lead Frame	0.449	0.422	4,486		Nickel	7440-02-0	3.90	
Araldite GY 250	25068-38-6	Lead Frame	0.449	0.422	4,486		Barite	7727-43-7	2.50	
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.179	0.169	1,794		Magnesium silicate	14807-96-6	2.00	
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-Methoxymethylethoxy)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
Tin	7440-31-5	Plating on external leads (pins)	17.257	16.239	172,569		2000	Silver	7440-22-4	80.00
Silver	7440-22-4	Plating on external leads (pins)	0.723	0.680	7,228	Phenolic resin		26834-02-6	20.00	
Copper	7440-50-8	Plating on external leads (pins)	0.090	0.085	904	Total 100.00				
TOTALS: 100.000 94.100 1,000,000						7.20 (mg) Total	Chip (Die)	% of Total Weight	7.65	
0.0941 g Total Mass						Doped Silicon	Doped Silicon	7440-21-3	100	
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 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						0.81 (mg) Total	Wire Bond	% of Total Weight	0.86	
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data.						Doped Gold	Doped Gold	7440-57-5	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'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 concern for any regulatory scheme world-wide.						Total 100.00				
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/						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 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.						Tin	Tin	7440-31-5	95.50	
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94.10

100.00



Semiconductor Device Type: BG 121 (Lead) TFBGA 10x10x1 (2X)			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 e1				
			107.44	(mg) Total	Mold Compound / Halogen-Free	% of Total Weight	55.84						
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm								
fused silica	60676-86-0	Mold Compound / Halogen-Free	47.464	91.321	474.640	GE-100LFC-S	fused silica	60676-86-0	85.00				
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 Hydroxide	14808-60-7	Mold Compound / Halogen-Free	0.558	1.074	5.584		Metal Hydroxide	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							
			41.60	(mg) Total	Substrate + Solder Mask (AUS308) Halogen-Free	% of Total Weight	21.62						
Glass fibers	65997-17-3	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46.267	CCL-HL832N	Copper	7440-50-8	35.90				
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46.267		Glass fibers	65997-17-3	21.40				
Silica, chemically prepared	7631-86-9	Substrate + Solder Mask (AUS308)Halogen-Free	1.730	3.328	17.296		Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	21.40				
Nickel	7440-02-0	Substrate + Solder Mask (AUS308)Halogen-Free	0.843	1.622	8.432		Silica, chemically prepared	7631-86-9	8.00				
Barite	7727-43-7	Substrate + Solder Mask (AUS308)Halogen-Free	0.541	1.040	5.405		Nickel	7440-02-0	3.90				
Magnesium silicate	14807-96-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.832	4.324		Barite	7727-43-7	2.50				
Araldite GY 250	25068-38-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.832	4.324		Magnesium silicate	14807-96-6	2.00				
(2-Methoxymethylethoxy)propanol	34590-94-8	Substrate + Solder Mask (AUS308)Halogen-Free	0.173	0.333	1.730		Araldite GY 250	25068-38-6	2.00				
Misc. system		Substrate + Solder Mask (AUS308)Halogen-Free	0.324	0.624	3.243		(2-Methoxymethylethoxy)propanol	34590-94-8	0.80				
Aluminium-hydroxide-oxide	24623-77-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.108	0.208	1.081		Misc. system		1.50				
Gold	7440-57-5	Substrate + Solder Mask (AUS308)Halogen-Free	0.022	0.042	216		Aluminium-hydroxide-oxide	24623-77-6	0.50				
Silver (Ag)	7440-22-4	Die Attach	0.550	1.059	5.502		Gold	7440-57-5	0.10				
Diester Resin	Trade Secret	Die Attach	0.138	0.265	1.376		Total 100.00						
Acrlate Resin	Trade Secret	Die Attach	0.052	0.099	516	1.46	(mg) Total	Die Attach	% of Total Weight				
Polymeric Resin	Trade Secret	Die Attach	0.021	0.040	206	2300	Silver (Ag)	7440-22-4	72				
For reporting purposes, silicon integrated circuit presumed to be all silicon	7440-21-3	Chip (Die)	7.940	15.277	79.400		Diester Resin	Trade Secret	18				
Tin (Sn)	7440-31-5	Solder Ball (SAC405)	12.224	23.519	122.240		Acrlate Resin	Trade Secret	7				
Silver (Ag)	7440-22-4	Solder Ball (SAC405)	0.512	0.985	5.120		Polymeric Resin	Trade Secret	3				
Copper (Cu)	7440-50-8	Solder Ball (SAC405)	0.064	0.123	640	Total 100.00							
Gold (Au)	7440-57-5	Bond Wire	1.030	1.981	10,296.00	15.28	Total (mg)	Chip (Die)	% of Total Weight				
Palladium (Pd)	7440-05-3	Bond Wire	0.010	0.020	104.00		For reporting purposes, silicon integrated circuit presumed to be all silicon	7440-21-3	100				
0.1924 g Total Mass			TOTALS:	100.000	192.400	1,000.000	Total 100.00						
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 Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).									24.63	(mg) Total	Solder Ball (SAC405)	% of Total Weight	12.80
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.									SAC405	Tin (Sn)	7440-31-5	95.50	
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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/offering/industries/chemicals/plastics/										Copper (Cu)	7440-50-8	0.50	
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.									Total 100.00				
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.									2.00	(mg) Total	Bond Wire	% of Total Weight	1.04
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									Total 100.00				
									192.40			100.00	