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.

RoHS Recast or "RoHS2:

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

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

Ozone Depleting Materials

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

Brominated Flame Retardant Polymers

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

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

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

Substances of Concern

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

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

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

The mold compounds used by Microchip and its sub-contract assembly houses to assemble Microchip's semiconductor devices **do not** contain inorganic particulate red phosphorous. Rather, prior to July 2009, diantimony trioxide was the primary inorganic flame retardant material in most mold compounds; one unique mold compound used a trade secret "metal hydroxide" instead of diantimony trioxide. Certain mold compounds **do not** contain an inorganic flame retardant.

Absence of Chemical Substances

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

- The chemical substance is **NOT** an intentional ingredient in the semiconductor device; and
- To the best of Microchip's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, 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. 4.1

Microchip semiconductor products meet the requirements of the Consumer Electronics Association (CEA), DIGITALEUROPE, and Japanese Green Procurement Survey Standardization Initiative (JGPSSI) Joint Industry Guide - Material Composition Declaration for Electro technical Products - JIG-101 Ed. 4.0. This guide represents industry-wide consensus on the relevant materials and substances that shall be disclosed by suppliers when those materials and substances are present in products.

Implementation of copper wire bond

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

Rare Earth Metals

Microchip semiconductor products and modules do not contain or use any of the set of seventeen rare earth metals. However, Microchip does use cerium as cerium oxide during a manufacturing process of the integrated circuit. The supplier for this chemical has taken steps to mitigate the reduction of the availability of cerium oxide. There is no anticipation of a shortage of this substance.

Packing Materials

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

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

Microchip Technology Incorporated's General Statement of Warranty

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

MICROCHIP

Semiconductor Device Type: EB 03 (Lead) DDPAK (F4)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Fused Silica	60676-86-0	Mold Compound	34.505	478.823	345,048
Epoxy Resin 1	Trade Secret	Mold Compound	1.274	17.684	12,743
Epoxy Resin 2	Trade Secret	Mold Compound	1.176	16.324	11,763
Phenol Resin	Trade Secret	Mold Compound	1.764	24.485	17,645
Carbon Black	1333-86-4	Mold Compound	0.098	1.360	980
Undeclared	Trade Secret	Mold Compound	0.392	5.441	3,921
Copper	7440-50-8	Lead Frame	58.494	811.716	584,936
Tin	7440-31-5	Lead Frame	0.099	1.368	986
Silver	7440-22-4	Lead Frame	1.138	15.790	11,379
Silver (Ag)	7440-22-4	Die Attach	0.086	1.198	864
Proprietary Resin	Trade Secret	Die Attach	0.020	0.282	204
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.003	0.046	33
Silicon	7440-21-3	Chip (Die)	0.270	3.747	2,700
Gold	7440-57-5	Wire Bond	0.070	0.971	700
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.610	8.465	6,100
		TOTALS:	**100.000**	**1,387.700**	**1,000,000**

1.3877 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

544.12	(mg) Total	Mold Compound	% ot Total Weight	39.21
	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**	

828.87	(mg) Total	Lead Frame	% of Total Weight	59.73
	Copper	7440-50-8	97.93	
	Tin	7440-31-5	0.17	
	Silver	7440-22-4	1.91	
		Total	**100.00**	

1.53	(mg) Total	Die Attach	% of Total Weight	0.11
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hard	Trade Secret	3	
		Total	**100.00**	

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

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.

MICROCHIP

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
		TOTALS:	**100.000**	**1,983.900**	**1,000,000**

1.9839 g Total Mass

526.92	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**26.56**
	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**
	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**
	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				**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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MICROCHIP

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
Silica, fused	60676-86-0	Mold Compound	43.200	6.739	432,000
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.328	0.363	23,280
Phenolic Resin	Trade Secret	Mold Compound	2.328	0.363	23,280
Carbon Black	1333-86-4	Mold Compound	0.144	0.022	1,440
Copper	7440-50-8	Lead Frame	44.421	6.930	444,212
Tin	7440-31-5	Lead Frame	0.114	0.018	1,140
Silver	7440-22-4	Lead Frame	0.869	0.136	8,687
Zinc	7440-66-6	Lead Frame	0.082	0.013	821
Chromium	7440-47-3	Lead Frame	0.114	0.018	1,140
Silver	7440-22-4	Die Attach	0.187	0.029	1,872
Acrylate resins Proprietary	Trade Secret	Die Attach	0.043	0.007	432
Treated silica	Trade Secret	Die Attach	0.005	0.001	48
Heterocyclic organic compound	Trade Secret	Die Attach	0.005	0.001	48
Silicon	7440-21-3	Chip (Die)	1.640	0.256	16,400
Gold	7440-57-5	Wire Bond	0.400	0.062	4,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.120	0.643	41,200
		TOTALS:	**100.000**	**15.600**	**1,000,000**

0.0156 g Total Mass

7.49	(mg) Total	Mold Compound	% ot Total Weight	48
	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**	

7.11	(mg) Total	Lead Frame	% of Total Weight	45.6
	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**	

0.04	(mg) Total	Die Attach	% of Total Weight	0.24
	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**	

0.26	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**

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MICROCHIP

Semiconductor Device Type: MF 08 (Lead) DFN 3x3 mm (A7 / AJ)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	46.116	10.976	461,160
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.485	0.591	24,851
Phenolic Resin	Trade Secret	Mold Compound	2.485	0.591	24,851
Carbon Black	1333-86-4	Mold Compound	0.154	0.037	1,537
Copper	7440-50-8	Lead Frame	38.576	9.181	385,763
Tin	7440-31-5	Lead Frame	0.099	0.024	990
Silver	7440-22-4	Lead Frame	0.754	0.180	7,544
Zinc	7440-66-6	Lead Frame	0.071	0.017	713
Chromium	7440-47-3	Lead Frame	0.099	0.024	990
Silver	7440-22-4	Die Attach	0.733	0.175	7,332
Acrylate resins Proprietary	Trade Secret	Die Attach	0.169	0.040	1,692
Treated silica	Trade Secret	Die Attach	0.019	0.004	188
Heterocyclic organic compound	Trade Secret	Die Attach	0.019	0.004	188
Silicon	7440-21-3	Chip (Die)	3.610	0.859	36,100
Gold	7440-57-5	Wire Bond	1.470	0.350	14,700
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.140	0.747	31,400
		TOTALS:	**100.000**	**23.800**	**1,000,000**

0.0238 g Total Mass

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

12.20	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**51.24**
	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**	
9.42	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**39.6**
	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**	
0.22	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.94**
	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**	
0.86	**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**

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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MICROCHIP

Semiconductor Device Type: MD 08 (Lead) DFN 4x4 (M8)

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling: e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	38.484	17.279	384,840
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.074	0.931	20,739
Phenolic Resin	Trade Secret	Mold Compound	2.074	0.931	20,739
Carbon Black	1333-86-4	Mold Compound	0.128	0.058	1,283
Copper	7440-50-8	Lead Frame	44.970	20.191	449,695
Iron	7439-89-6	Lead Frame	1.106	0.497	11,061
Silver	7440-22-4	Lead Frame	0.897	0.403	8,967
Zinc	7440-66-6	Lead Frame	0.059	0.026	588
Phosphorous	7723-14-0	Lead Frame	0.039	0.017	388
Silver	7440-22-4	Die Attach	0.913	0.410	9,126
Acrylate resins Proprietary	Trade Secret	Die Attach	0.211	0.095	2,106
Treated silica	Trade Secret	Die Attach	0.023	0.011	234
Heterocyclic organic compound	Trade Secret	Die Attach	0.023	0.011	234
Silicon	7440-21-3	Chip (Die)	5.470	2.456	54,700
Doped Gold	7440-57-5	Wire Bond	0.320	0.144	3,200
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.210	1.441	32,100
		TOTALS:	**100.000**	**44.900**	**1,000,000**

0.0449 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

19.20	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**42.76**
	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**	
21.13	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**47.07**
	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**	
0.53	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.17**
	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**	
2.46	**(mg) Total**	**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**	
44.900				**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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MICROCHIP

Semiconductor Device Type: MF 8 (Lead) DFN-S 6x5 mm (A6 / AW)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	44.208	33.996	442,080
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.382	1.832	23,823
Phenolic Resin	Trade Secret	Mold Compound	2.382	1.832	23,823
Carbon Black	1333-86-4	Mold Compound	0.147	0.113	1,474
Copper	7440-50-8	Lead Frame	42.960	33.036	429,600
Tin	7440-31-5	Lead Frame	0.110	0.085	1,103
Silver	7440-22-4	Lead Frame	0.840	0.646	8,401
Zinc	7440-66-6	Lead Frame	0.079	0.061	794
Chromium	7440-47-3	Lead Frame	0.110	0.085	1,103
Silver	7440-22-4	Die Attach	0.320	0.246	3,198
Acrylate resins Proprietary	Trade Secret	Die Attach	0.074	0.057	738
Treated silica	Trade Secret	Die Attach	0.008	0.006	82
Heterocyclic organic compound	Trade Secret	Die Attach	0.008	0.006	82
Silicon	7440-21-3	Chip (Die)	2.870	2.207	28,700
Gold	7440-57-5	Wire Bond	0.170	0.131	1,700
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.330	2.561	33,300
		TOTALS:	**100.000**	**76.900**	**1,000,000**

0.0769 g Total Mass

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

37.77	(mg) Total	Mold Compound	% ot Total Weight	49.12
	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**	

33.91	(mg) Total	Lead Frame	% of Total Weight	44.1
	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**	

0.32	(mg) Total	Die Attach	% of Total Weight	0.41
	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	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**

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MICROCHIP

Semiconductor Device Type: MF 10 (Lead) DFN 3x3 mm (E2 / EJ)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	72.864	17.414	728,640
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.927	0.938	39,266
Phenolic Resin	Trade Secret	Mold Compound	3.927	0.938	39,266
Carbon Black	1333-86-4	Mold Compound	0.243	0.058	2,429
Copper	7440-50-8	Lead Frame	3.544	0.847	35,444
Iron	7439-89-6	Lead Frame	0.087	0.021	872
Silver	7440-22-4	Lead Frame	0.071	0.017	707
Zinc	7440-66-6	Lead Frame	0.005	0.001	46
Phosphorous	7723-14-0	Lead Frame	0.003	0.001	31
Silver	7440-22-4	Die Attach	0.491	0.117	4,914
Acrylate resins Proprietary	Trade Secret	Die Attach	0.113	0.027	1,134
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
		TOTALS:	**100.000**	**23.900**	**1,000,000**

0.0239 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

19.35	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**80.96**
	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**
	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**
	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				**100.000**

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MICROCHIP

Semiconductor Device Type: MF 08 (pin) PDFN 5x6x0.9mm (AS)

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	48.960	51.271	489,600
Epoxy Resin	500-033-5	Mold Compound	2.638	2.763	26,384
Phenolic Resin	Trade Secret	Mold Compound	2.638	2.763	26,384
Carbon Black	1333-86-4	Mold Compound	0.163	0.171	1,632
Copper	7440-50-8	Lead Frame	16.394	17.168	163,942
Iron	7439-89-6	Lead Frame	0.403	0.422	4,033
Silver	7440-22-4	Lead Frame	0.327	0.342	3,269
Zinc	7440-66-6	Lead Frame	0.021	0.022	215
Phosphorous	7723-14-0	Lead Frame	0.014	0.015	142
Copper	7440-50-8	Clip Attachment (92.5/5/2.5 PbSnAg)	14.697	15.391	146,970
Iron	7439-89-6	Clip Attachment (92.5/5/2.5 PbSnAg)	0.354	0.371	3,544
Zinc	7440-66-6	Clip Attachment (92.5/5/2.5 PbSnAg)	0.018	0.019	181
Phosphorous	7723-14-0	Clip Attachment (92.5/5/2.5 PbSnAg)	0.011	0.011	106
Lead	7439-92-1	Clip Attachment (92.5/5/2.5 PbSnAg)	6.346	6.645	63,455
Silver	7440-22-4	Clip Attachment (92.5/5/2.5 PbSnAg)	0.343	0.359	3,430
Tin	7440-31-5	Clip Attachment (92.5/5/2.5 PbSnAg)	0.172	0.180	1,715
Silicon	7440-21-3	Chip (Die)	3.290	3.445	32,900
Doped Gold	7440-57-5	Wire Bond	0.830	0.869	8,300
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.380	2.492	23,800
		TOTALS:	**100.000**	**104.720**	**1,000,000**

0.1047 g Total Mass

56.97	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**54.4**
	Silica, fused	60676-86-0	90.00	
	Epoxy Resin	500-033-5	4.85	
	Phenolic Resin	Trade Secret	4.85	
	Carbon Black	1333-86-4	0.30	
		Total	**100.00**	
17.97	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**17.16**
	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**	
15.79	**(mg) Total**	**Clip**	**% of Total Weight**	**15.08**
	Copper	7440-50-8	97.46	
	Iron	7439-89-6	2.35	
	Zinc	7440-66-6	0.12	
	Phosphorous	7723-14-0	0.07	
		Total	**100.00**	
7.18	**(mg) Total**	**Clip Attachment (92.5/5/2.5 PbSnAg)**	**% of Total Weight**	**6.86**
High temp solder	Lead	7439-92-1	92.50	
	Silver	7440-22-4	5.00	
	Tin	7440-31-5	2.50	
		Total	**100.00**	
3.45	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**3.29**
Doped Silicon	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.87	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.83**
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	
2.49	**(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**	
104.720				**100.000**

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) uses EU-RoHS application exemption 7(a): Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead.

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MICROCHIP

Semiconductor Device Type: MYY 06 (Lead) TDFN 2x2x0.8mm (4Q)

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e4

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	50.975	6.117	509,745
Epoxy Resin	Trade Secret	Mold Compound	5.217	0.626	52,174
Phenolic Resin	Trade Secret	Mold Compound	3.598	0.432	35,982
Carbon Black	1333-86-4	Mold Compound	0.180	0.022	1,799
Copper	7440-50-8	Lead Frame	32.712	3.925	327,123
Iron	7439-89-6	Lead Frame	0.773	0.093	7,733
Phosphorous	7723-14-0	Lead Frame	0.084	0.010	841
Zinc (Metal)	7440-66-0	Lead Frame	0.050	0.006	504
Silver	7440-22-4	Die Attach	0.886	0.106	8,856
Epoxy Resin	9003-36-5	Die Attach	0.226	0.027	2,256
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.076	0.009	756
Phenolic hardener	92-88-6	Die Attach	0.004	0.000	36
Butyl cellosolve acetate	112-07-2	Die Attach	0.010	0.001	96
Silicon	7440-21-3	Chip (Die)	4.010	0.481	40,100
Gold	7440-57-5	Wire Bond	0.770	0.092	7,700
Nickel	7440-02-0	Plating on external leads (pins)	0.406	0.049	4,064
Palladium	7440-05-03	Plating on external leads (pins)	0.022	0.003	215
Gold	7440-57-5	Plating on external leads (pins)	0.002	0.000	22
		TOTALS:	**100.000**	**12.000**	**1,000,000**

0.0120 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

7.20	(mg) Total	Mold Compound	% ot Total Weight	59.97
	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**	

4.03	(mg) Total	Lead Frame	% of Total Weight	33.62
	Copper	7440-50-8	97.30	
	Iron	7439-89-6	2.30	
	Phosphorous	7723-14-0	0.25	
	Zinc (Metal)	7440-66-0	0.15	
		Total	**100.00**	

0.14	(mg) Total	Die Attach	% of Total Weight	1.2
	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**	

0.48	Total (mg)	Chip (Die)	% of Total Weight	4.01
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.09	(mg) Total	Wire Bond	% of Total Weight	0.77
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

0.05	(mg) Total	Plating on external leads (pins)	% of Total Weight	0.43
	Nickel	7440-02-0	94.50	
	Palladium	7440-05-3	5.00	
	Gold	7440-57-5	0.50	
		Total	**100.00**	

12.00 100.00

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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MICROCHIP

Semiconductor Device Type: MNY 08 TDFN 2x3x0.8mm (5Q)

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
Silica, vitreous (or fused)	60676-86-0	Mold Compound	50.975	7.136	509,745
Epoxy Resin	Trade Secret	Mold Compound	5.217	0.730	52,174
Phenolic Resin	Trade Secret	Mold Compound	3.598	0.504	35,982
Carbon Black	1333-86-4	Mold Compound	0.180	0.025	1,799
Copper	7440-50-8	Lead Frame	32.712	4.580	327,123
Iron	7439-89-6	Lead Frame	0.773	0.108	7,733
Phosphorous	7723-14-0	Lead Frame	0.084	0.012	841
Zinc (Metal)	7440-66-0	Lead Frame	0.050	0.007	504
Silver	7440-22-4	Die Attach	0.936	0.131	9,360
Acrylate resins Proprietary	Trade Secret	Die Attach	0.216	0.030	2,160
Treated silica	Trade Secret	Die Attach	0.024	0.003	240
Heterocyclic organic compound	Trade Secret	Die Attach	0.024	0.003	240
Silicon	7440-21-3	Chip (Die)	4.010	0.561	40,100
Gold	7440-57-5	Wire Bond	0.770	0.108	7,700
Nickel	7440-02-0	Plating on external leads (pins)	0.412	0.058	4,116
Palladium	5/3/7440	Plating on external leads (pins)	0.014	0.002	139
Gold	7440-57-5	Plating on external leads (pins)	0.004	0.001	45
		TOTALS:	**100.000**	**14.000**	**1,000,000**

0.0140 g Total Mass

8.40	(mg) Total	Mold Compound	% ot Total Weight	59.97
	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**	

4.71	(mg) Total	Lead Frame	% of Total Weight	33.62
	Copper	7440-50-8	97.30	
	Iron	7439-89-6	2.30	
	Phosphorous	7723-14-0	0.25	
	Zinc (Metal)	7440-66-0	0.15	
		Total	**100.00**	

0.17	(mg) Total	Die Attach	% of Total Weight	1.2
	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**	

0.56	Total (mg)	Chip (Die)	% of Total Weight	4.01
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.11	(mg) Total	Wire Bond	% of Total Weight	0.77
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

0.06	(mg) Total	Plating on external leads (pins)	% of Total Weight	0.43
	Nickel	7440-02-0	95.73	
	Palladium	7440-05-3	3.23	
	JGPSSI (D02) (Gold)	7440-57-5	1.04	
		Total	**100.00**	

14.000 **100.000**

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MICROCHIP

Semiconductor Device Type: 08 TDFN 2x3x0.75mm (8Q)

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
Silica, vitreous (or fused)	60676-86-0	Mold Compound	45.118	21.882	451,180
Epoxy Resin	Trade Secret	Mold Compound	4.618	2.240	46,180
Phenolic Resin	Trade Secret	Mold Compound	3.185	1.545	31,848
Carbon Black	1333-86-4	Mold Compound	0.159	0.077	1,592
Copper	7440-50-8	Lead Frame	39.338	19.079	393,384
Iron	7439-89-6	Lead Frame	0.930	0.451	9,299
Phosphorous	7723-14-0	Lead Frame	0.101	0.049	1,011
Zinc (Metal)	7440-44-0	Lead Frame	0.061	0.029	606
Silver	7440-22-4	Die Attach	0.146	0.071	1,463
Epoxy resin	Trade Secret	Die Attach	0.038	0.018	380
Metal oxide	Trade Secret	Die Attach	0.006	0.003	57
Silicon	7440-21-3	Chip (Die)	3.980	1.930	39,800
Gold	7440-57-5	Wire Bond	0.560	0.272	5,600
Nickel	7440-02-0	Plating on external leads (pins)	1.584	0.768	15,840
Palladium	7440-05-3	Plating on external leads (pins)	0.088	0.043	880
Gold	7440-57-5	Plating on external leads (pins)	0.088	0.043	880
		TOTALS:	**100.000**	**48.500**	**1,000,000**

0.0485 g Total Mass

25.74	(mg) Total	Mold Compound	% ot Total Weight	53.08
	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**	

19.61	(mg) Total	Lead Frame	% of Total Weight	40.43
	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**	

0.09	(mg) Total	Die Attach	% of Total Weight	0.19
	Silver	7440-22-4	77	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
		Total	**100.00**	

1.93	Total (mg)	Chip (Die)	% of Total Weight	3.98
	Dope Silicon	7440-21-3	100	
		Total	**100.00**	

0.27	(mg) Total	Wire Bond	% of Total Weight	0.56
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

0.85	(mg) Total	Plating on external leads (pins)	% of Total Weight	1.76
	Nickel	7440-02-0	90.00	
	Palladium	7440-05-3	5.00	
	Gold	7440-57-5	5.00	
		Total	**100.00**	

48.500				100.000

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MICROCHIP

Semiconductor Device Type: QAE 8 (Lead) TDFN-S 6x5x0.8mm (U3)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	47.340	34.937	473,400
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.551	1.883	25,511
Phenolic Resin	Trade Secret	Mold Compound	2.551	1.883	25,511
Carbon Black	1333-86-4	Mold Compound	0.158	0.116	1,578
Copper	7440-50-8	Lead Frame	38.215	28.203	382,150
Iron	7439-89-6	Lead Frame	0.940	0.694	9,400
Silver	7440-22-4	Lead Frame	0.762	0.562	7,620
Zinc	7440-66-6	Lead Frame	0.050	0.037	500
Phosphorous	7723-14-0	Lead Frame	0.033	0.024	330
Silver (Ag)	7440-22-4	Die Attach	0.704	0.520	7,040
Epoxy Resin	Trade Secret	Die Attach	0.150	0.110	1,496
Copper (Cu)	7440-50-8	Die Attach	0.026	0.019	264
Silicon	7440-21-3	Chip (Die)	5.140	3.793	51,400
Gold	7440-57-5	Wire Bond	0.270	0.199	2,700
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.110	0.819	11,100
		TOTALS:	**100.000**	**73.800**	**1,000,000**

0.0738 g Total Mass

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

38.82	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**52.6**
	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**	
29.52	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**40**
	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**	
0.65	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.88**
	Silver (Ag)	7440-22-4	80	
	Epoxy Resin	Trade Secret	17	
	Copper (Cu)	7440-50-8	3	
		Total	**100.00**	
3.79	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**5.14**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.20	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.27**
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
0.82	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.11**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
73.800				**100.000**

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MICROCHIP

Semiconductor Device Type: Q2AE 08 (Lead) TDFN-S 6x8x0.8mm (S9)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Fused Silica	60676-86-0	Mold Compound	32.869	46.509	328,689
Epoxy Resin 1	Trade Secret	Mold Compound	2.414	3.416	24,141
Phenol Resin	Trade Secret	Mold Compound	1.764	2.496	17,642
Carbon Black	1333-86-4	Mold Compound	0.093	0.131	929
Copper	7440-50-8	Lead Frame	47.490	67.199	474,904
Silver	7440-22-4	Lead Frame	3.287	4.651	32,867
Iron	7439-89-6	Lead Frame	1.143	1.617	11,425
Zinc	7440-66-6	Lead Frame	0.177	0.251	1,774
Phosphorus	7723-14-0	Lead Frame	0.073	0.103	730
Silver	7440-22-4	Die Attach	0.963	1.362	9,625
Acrylic Resin	Trade secret	Die Attach	0.106	0.150	1,063
Polybutadiene derivative & copolymer	Trade secret	Die Attach	0.081	0.115	813
Acrylate	Trade secret	Die Attach	0.069	0.097	688
Epoxy Resin 2	Trade secret	Die Attach	0.031	0.044	313
Silicon	7440-21-3	Chip (Die)	7.800	11.037	78,000
Gold	7440-57-5	Wire Bond	0.040	0.057	400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.600	2.264	16,000
		TOTALS:	**100.000**	**141.500**	**1,000,000**

0.1415 g Total Mass

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

52.55	(mg) Total	Mold Compound	% ot Total Weight	37.14
	Fused Silica	60676-86-0	88.50	
	Epoxy Resin	Trade Secret	6.50	
	Phenol Resin	Trade Secret	4.75	
	Carbon Black	1333-86-4	0.25	
		Total	**100.00**	

73.82	(mg) Total	Lead Frame	% of Total Weight	52.17
	Copper	7440-50-8	91.03	
	Silver	7440-22-4	6.30	
	Iron	7439-89-6	2.19	
	Zinc	7440-66-6	0.34	
	Phosphorus	7723-14-0	0.14	
		Total	**100.00**	

1.77	(mg) Total	Die Attach	% of Total Weight	1.25
	Silver	7440-22-4	77.00	
	Acrylic Resin	Trade secret	8.50	
Polybutadiene derivative & copolymer		Trade secret	6.50	
	Acrylate	Trade secret	5.50	
	Epoxy Resin	Trade secret	2.50	
		Total	**100.00**	

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**

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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MICROCHIP

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
Silica, vitreous (or fused)	60676-86-0	Mold Compound	43.495	32.969	434,945
Epoxy Resin	Trade Secret	Mold Compound	4.452	3.374	44,518
Phenolic Resin	Trade Secret	Mold Compound	3.070	2.327	30,702
Carbon Black	1333-86-4	Mold Compound	0.154	0.116	1,535
Copper	7440-50-8	Lead Frame	37.675	28.557	376,746
Iron	7439-89-6	Lead Frame	0.891	0.675	8,906
Phosphorous	7723-14-0	Lead Frame	0.097	0.073	968
Zinc (Metal)	7440-66-0	Lead Frame	0.058	0.044	581
Silver	7440-22-4	Die Attach	1.051	0.797	10,508
Epoxy resin	Trade Secret	Die Attach	0.284	0.215	2,840
Metal oxide	Trade Secret	Die Attach	0.043	0.032	426
Gamma-butyrolactone	96-48-0	Die Attach	0.043	0.032	426
Silicon	7440-21-3	Chip (Die)	8.220	6.231	82,200
Gold	7440-57-5	Wire Bond	0.260	0.197	2,600
Nickel	7440-02-0	Plating on external leads (pins)	0.198	0.150	1,985
Palladium	7440-05-03	Plating on external leads (pins)	0.011	0.008	105
Gold	7440-57-5	Plating on external leads (pins)	0.001	0.001	11
		TOTALS:	**100.000**	**75.800**	**1,000,000**

0.0758 g Total Mass

38.79	(mg) Total	Mold Compound	% ot Total Weight	51.17
	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**	

29.35	(mg) Total	Lead Frame	% of Total Weight	38.72
	Copper	7440-50-8	97.30	
	Iron	7439-89-6	2.30	
	Phosphorous	7723-14-0	0.25	
	Zinc (Metal)	7440-66-0	0.15	
		Total	**100.00**	

1.08	(mg) Total	Die Attach	% of Total Weight	1.42
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	

6.23	Total (mg)	Chip (Die)	% of Total Weight	8.22
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

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	7440-05-3	5.00	
	Gold	7440-57-5	0.50	
		Total	**100.00**	
75.800				**100.000**

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MICROCHIP

Semiconductor Device Type: MN / HC / LC 10 (Lead) TDFN 3x3x0.8mm (QA)

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	51.000	10.710	510,000
Epoxy Resin	Trade Secret	Mold Compound	5.220	1.096	52,200
Phenolic Resin	Trade Secret	Mold Compound	3.600	0.756	36,000
Carbon Black	1333-86-4	Mold Compound	0.180	0.038	1,800
Copper	7440-50-8	Lead Frame	30.572	6.420	305,720
Iron	7439-89-6	Lead Frame	0.752	0.158	7,520
Silver	7440-22-4	Lead Frame	0.610	0.128	6,096
Zinc	7440-66-6	Lead Frame	0.040	0.008	400
Phosphorous	7723-14-0	Lead Frame	0.026	0.006	264
Silver	7440-22-4	Die Attach	0.059	0.012	590
Epoxy Resin	9003-36-5	Die Attach	0.015	0.003	150
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.005	0.001	50
Phenolic hardener	92-88-6	Die Attach	0.000	0.000	2
Butyl cellosolve acetate	112-07-2	Die Attach	0.001	0.000	6
Silicon	7440-21-3	Chip (Die)	4.820	1.012	48,200
Doped Gold	7440-57-5	Wire Bond	0.100	0.021	1,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	0.630	30,000
		TOTALS:	**100.000**	**21.000**	**1,000,000**

0.0210 g Total Mass

12.60	(mg) Total	Mold Compound	% ot Total Weight	60.00
	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**	
6.72	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**32.00**
	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**	
0.02	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.08**
	Silver	7440-22-4	73.80	
	Epoxy Resin	9003-36-5	18.80	
	t-Butyl phenyl glycidyl ether	3101-60-8	6.30	
	Phenolic hardener	92-88-6	0.30	
	Butyl cellosolve acetate	112-07-2	1	
		Total	**100.00**	
1.01	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**4.82**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.02	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.10**
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	
0.63	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**3.00**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
21.000				**100.000**

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MICROCHIP

Semiconductor Device Type: AIA 10 VDFN 3x3x0.9 (9Q)

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
Silica, fused	60676-86-0	Mold Compound	42.204	11.690	422,035
Epoxy Resin	Trade Secret	Mold Compound	2.938	0.814	29,376
Phenolic Resin A	Trade Secret	Mold Compound	2.938	0.814	29,376
Aluminium hydroxide	21645-51-2	Mold Compound	0.734	0.203	7,344
Carbon Black	1333-86-4	Mold Compound	0.147	0.041	1,469
Copper	7440-50-8	Lead Frame	37.993	10.524	379,928
Iron	7439-89-6	Lead Frame	0.917	0.254	9,172
Zinc	7440-66-6	Lead Frame	0.049	0.014	488
Silver	7440-22-4	Lead Frame	0.039	0.011	390
Phosphorus	7723-14-0	Lead Frame	0.032	0.009	322
Silver	7440-22-4	Die Attach	0.477	0.132	4,774
Epoxy resin	Trade Secret	Die Attach	0.124	0.034	1,240
Metal oxide	Trade Secret	Die Attach	0.019	0.005	186
Silicon	7440-21-3	Chip (Die)	9.110	2.523	91,100
Doped Gold	7440-57-5	Wire Bond	0.080	0.022	800
Nickel	7440-02-0	Plating on external leads (pins)	1.980	0.548	19,800
Palladium	7440-05-3	Plating on external leads (pins)	0.110	0.030	1,100
Gold	7440-57-5	Plating on external leads (pins)	0.110	0.030	1,100
		TOTALS:	**100.000**	**27.700**	**1,000,000**

0.0277 g Total Mass

13.56	(mg) Total	Mold Compound	% ot Total Weight	48.96
	Silica, fused	60676-86-0	86.20	
	Epoxy Resin	Trade Secret	6.00	
	Phenolic Resin A	Trade Secret	6.00	
	Aluminium hydroxide	21645-51-2	1.50	
	Carbon Black	1333-86-4	0.30	
		Total	**100.00**	

10.81	(mg) Total	Lead Frame	% of Total Weight	39.03
	Copper	7440-50-8	97.34	
	Iron	7439-89-6	2.35	
	Zinc	7440-66-6	0.13	
	Silver	7440-22-4	0.10	
	Phosphorus	7723-14-0	0.08	
		Total	**100.00**	

0.17	(mg) Total	Die Attach	% of Total Weight	0.62
	Silver	7440-22-4	77.00	
	Epoxy resin	Trade Secret	20.00	
	Metal oxide	Trade Secret	3.00	
		Total	**100.00**	

2.52	(mg) Total	Chip (Die)	% of Total Weight	9.11
	Doped Silicon	7440-21-3	100.00	
		Total	**100.00**	

0.02	(mg) Total	Wire Bond	% of Total Weight	0.08
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	

0.61	(mg) Total	Plating on external leads (pins)	% of Total Weight	2.2
	Nickel	7440-02-0	90.00	
	Palladium	7440-05-3	5.00	
	Gold	7440-57-5	5.00	
		Total	**100.00**	

27.70 100.00

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MICROCHIP

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

Termination Base Alloy: Copper Alloy (Cu)

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

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	% ot Total Weight	67.95
	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
	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
	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	7440-05-3	3.23	
	Gold	7440-57-5	1.04	
7.9		**Total**	**100.00**	

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MICROCHIP

Semiconductor Device Type: 64 LQFP 10x10x1.4mm V6

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	60.870	101.470	608,697
Epoxy Resin 1 & 2	Trade Secret	Mold Compound	4.245	7.076	42,451
Metal Hydroxide	Trade Secret	Mold Compound	4.101	6.837	41,012
Phenol Resin	Trade Secret	Mold Compound	2.590	4.318	25,902
Carbon Black	1333-86-4	Mold Compound	0.144	0.240	1,439
Copper	7440-50-8	Lead Frame	20.724	34.548	207,244
Nickel	7440-02-0	Lead Frame	0.553	0.921	5,527
Silicon	7440-21-3	Lead Frame	0.098	0.163	979
Magnesium	7439-95-4	Lead Frame	0.022	0.036	218
Silver	7440-22-4	Lead Frame	0.363	0.605	3,632
Silver	7440-22-4	Die Attach	0.146	0.244	1,463
Acrylic Resin	Trade secret	Die Attach	0.016	0.027	162
Polybutadiene derivative & Coplolymer	9003-17-2	Die Attach	0.012	0.021	124
Acrylated EP-Resin	Trade secret	Die Attach	0.010	0.017	105
Epoxy Resin	Trade secret	Die Attach	0.005	0.008	48
Silicon	7440-21-3	Chip (Die)	2.550	4.251	25,500
Gold	7440-57-5	Wire Bond	0.490	0.817	4,900
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.060	5.101	30,600
		TOTALS:	**100.000**	**166.700**	**1,000,000**

0.1667 g Total Mass

119.94	(mg) Total	Mold Compound	% ot Total Weight	71.95
	Fused Silica	60676-86-0	84.60	
	Epoxy Resin 1 & 2	Trade Secret	5.90	
	Metal Hydroxide	Trade Secret	5.70	
	Phenol Resin	Trade Secret	3.60	
	Carbon Black	1333-86-4	0.20	
		Total	**100.00**	

36.27	(mg) Total	Lead Frame	% of Total Weight	21.76
	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**	

0.32	(mg) Total	Die Attach	% of Total Weight	0.19
	Silver	7440-22-4	77.00	
	Acrylic Resin	Trade secret	8.50	
Polybutadiene derivative & Coplolymer		9003-17-2	6.50	
	Acrylated EP-Resin	Trade secret	5.50	
	Epoxy Resin	Trade secret	2.50	
		Total	**100.00**	

4.25	(mg) Total	Chip (Die)	% of Total Weight	2.55
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.82	(mg) Total	Wire Bond	% of Total Weight	0.49
Doped Gold	Gold	7440-57-5	100.00	
		Total	**100.00**	

5.10	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.06
	Tin	7440-31-5	100.00	
		Total	**100.00**	
166.700				**100.000**

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MICROCHIP

Semiconductor Device Type: 100 LQFP 14x14x1.4mm (H7)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	60.928	296.189	609,280
Epoxy Resin	Trade Secret	Mold Compound	6.236	30.316	62,362
Phenolic Resin	Trade Secret	Mold Compound	4.301	20.907	43,008
Carbon Black	1333-86-4	Mold Compound	0.215	1.045	2,150
Copper	7440-50-8	Lead Frame	23.626	114.855	236,264
Iron	7439-89-6	Lead Frame	0.581	2.825	5,812
Silver	7440-22-4	Lead Frame	0.471	2.290	4,711
Zinc	7440-66-6	Lead Frame	0.031	0.150	309
Phosphorous	7723-14-0	Lead Frame	0.020	0.099	204
Silver (Ag)	7440-22-4	Die Attach	0.332	1.614	3,320
ANHYDRIDE	Trade Secret	Die Attach	0.036	0.175	360
EPOXY RESIN	Trade Secret	Die Attach	0.032	0.156	320
Silicon	7440-21-3	Chip (Die)	1.640	7.973	16,400
Doped Gold	7440-57-5	Wire Bond	0.430	2.090	4,300
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.120	5.445	11,200
		TOTALS:	**100.000**	**486.130**	**1,000,000**

0.4861 g Total Mass

Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

348.46	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**71.68**
	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**	
120.22	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**24.73**
	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**	
1.94	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.4**
	Silver (Ag)	7440-22-4	83.00	
	ANHYDRIDE	Trade Secret	9.00	
	EPOXY RESIN	Trade Secret	8.00	
		Total	**100.00**	
7.97	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**1.64**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
2.09	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.43**
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
5.44	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.12**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
486.130				**100.000**

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MICROCHIP

Semiconductor Device Type: 100 LQFP 14x14x1.4mm H7

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica Fused	60676-86-0	Mold Compound	74.791	434.088	747,912
Epoxy Resin	Trade Secret	Mold Compound	5.287	30.687	52,872
Phenol Resin	Trade Secret	Mold Compound	4.397	25.523	43,975
Carbon Black	1333-86-4	Mold Compound	0.254	1.475	2,542
Copper	7440-50-8	Lead Frame	12.172	70.645	121,718
Nickel	7440-02-0	Lead Frame	0.325	1.884	3,246
Silver	7440-22-4	Lead Frame	0.213	1.238	2,133
Silicon	7440-21-3	Lead Frame	0.058	0.334	575
Magnesium	7439-95-4	Lead Frame	0.013	0.074	128
Silver	7440-22-4	Die Attach	0.031	0.179	308
Acrylic Resin	Trade secret	Die Attach	0.003	0.020	34
Epoxy Resin	Trade secret	Die Attach	0.001	0.006	10
Acrylated EP-Resin	Trade secret	Die Attach	0.002	0.013	22
Polybutadiene derivative & Coplolymer	9003-17-2	Die Attach	0.003	0.015	26
Silicon	7440-21-3	Chip (Die)	0.570	3.308	5,700
Copper	7440-50-8	Wire Bond	0.098	0.570	983
Palladium	7440-05-3	Wire Bond	0.002	0.010	18
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.780	10.331	17,800
		TOTALS:	**100.000**	**580.400**	**1,000,000**

0.5804 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

491.77	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**84.73**
	Silica Fused	60676-86-0	88.27	
	Epoxy Resin	Trade Secret	6.24	
	Phenol Resin	Trade Secret	5.19	
	Carbon Black	1333-86-4	0.30	
		Total	**100.00**	
74.18	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**12.78**
	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**	
0.23	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.04**
	Silver	7440-22-4	77.00	
	Acrylic Resin	Trade secret	8.50	
	Epoxy Resin	Trade secret	2.50	
	Acrylated EP-Resin	Trade secret	5.50	
	Polybutadiene derivative & Copl	9003-17-2	7	
		Total	**100.00**	
3.31	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**0.57**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.58	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.1**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		Total	**100.00**	
10.33	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.78**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
580.400				**100.000**

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MICROCHIP

Semiconductor Device Type: PH 144 (Lead) LQFP 20x20x1.4mm (H8)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.996	373.665	579,955
Epoxy Resin	Trade Secret	Mold Compound	5.936	38.246	59,360
Phenolic Resin	Trade Secret	Mold Compound	4.094	26.376	40,938
Carbon Black	1333-86-4	Mold Compound	0.205	1.319	2,047
Copper	7440-50-8	Lead Frame	26.955	173.669	269,547
Tin	7440-31-5	Lead Frame	0.069	0.446	692
Silver	7440-22-4	Lead Frame	0.527	3.396	5,271
Zinc	7440-66-6	Lead Frame	0.050	0.321	498
Chromium	7440-47-3	Lead Frame	0.069	0.446	692
Silver	7440-22-4	Die Attach	0.357	2.300	3,570
Epoxy resin	Trade Secret	Die Attach	0.102	0.657	1,020
Aliphatic acid anhydride / TPU-ALET	Trade Secret	Die Attach	0.051	0.329	510
Silicon	7440-21-3	Chip (Die)	2.090	13.466	20,900
Gold	7440-57-5	Wire Bond	0.280	1.804	2,800
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.220	7.860	12,200
		TOTALS:	**100.000**	**644.300**	**1,000,000**

0.6443 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

439.61	(mg) Total	Mold Compound	% ot Total Weight	68.23
	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**	

178.28	(mg) Total	Lead Frame	% of Total Weight	27.67
	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**	

3.29	(mg) Total	Die Attach	% of Total Weight	0.51
	Silver	7440-22-4	70	
	Epoxy resin	Trade Secret	20	
	Aliphatic acid anhydride / TPU-ALET	Trade Secret	10	
		Total	**100.00**	

13.47	Total (mg)	Chip (Die)	% of Total Weight	2.09
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

1.80	(mg) Total	Wire Bond	% of Total Weight	0.28
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

7.86	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.22
	Tin	7440-31-5	100.00	
		Total	**100.00**	

644.300 **100.000**

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MICROCHIP

Semiconductor Device Type: PQ 44 (Lead) MQFP (10x10x2mm) (T8)

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
Epoxy Resin	Trade Secret	Mold Compound	5.644	27.395	56,437
Phenolic Resin	Trade Secret	Mold Compound	3.892	18.893	38,922
Carbon Black	1333-86-4	Mold Compound	0.195	0.945	1,946
Copper	7440-50-8	Lead Frame	27.106	131.573	271,056
Nickel	7440-02-0	Lead Frame	0.723	3.509	7,229
Silver	7440-22-4	Lead Frame	0.475	2.306	4,750
Silicon	7440-21-3	Lead Frame	0.128	0.622	1,281
Magnesium	7439-95-4	Lead Frame	0.028	0.138	285
Silver (Ag)	7440-22-4	Die Attach	0.556	2.699	5,561
ANHYDRIDE	Trade Secret	Die Attach	0.060	0.293	603
EPOXY RESIN	Trade Secret	Die Attach	0.054	0.260	536
Silicon	7440-21-3	Chip (Die)	3.970	19.271	39,700
Gold	7440-57-5	Wire Bond	0.210	1.019	2,100
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.820	8.834	18,200
		TOTALS:	**100.000**	**485.410**	**1,000,000**

0.4854 g Total Mass

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

314.89	(mg) Total	Mold Compound	% ot 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**	

138.15	(mg) Total	Lead Frame	% of Total Weight	28.46
	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**	

3.25	(mg) Total	Die Attach	% of Total Weight	0.67
	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 **100.000**

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MICROCHIP

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
Silica, vitreous	60676-86-0	Mold Compound	67.830	17.364	678,300
Epoxy Resin	Trade Secret	Mold Compound	4.888	1.251	48,878
Phenolic Resin	Trade Secret	Mold Compound	4.888	1.251	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.501	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	0.061	2,394
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314
Iron	7439-89-6	Lead Frame	0.247	0.063	2,468
Silver	7440-22-4	Lead Frame	0.200	0.051	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.003	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.144	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.027	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.014	563
Modified Amine	827-43-0	Die Attach	0.026	0.007	263
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75,000
Doped Gold	7440-57-5	Wire Bond	0.200	0.051	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.320	12,500
		TOTALS:	**100.000**	**25.600**	**1,000,000**

0.0256 g Total Mass

20.43	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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	
2.69	(mg) Total	Lead Frame	% of Total Weight	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	
0.19	(mg) Total	Die Attach	% of Total Weight	0.75
	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	
1.92	(mg) Total	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
		Total	100.00	
0.05	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
		Total	100.00	
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

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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MICROCHIP

Semiconductor Device Type: UN 10 (Lead) MSOP 3x3mm (E3)

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
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	1.758	0.408	17,585
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	1.758	0.408	17,585
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.703	0.163	7,034
Carbon Black	1333-86-4	Mold Compound	0.086	0.020	861
Copper	7440-50-8	Lead Frame	42.830	9.937	428,299
Nickel	7440-02-0	Lead Frame	1.142	0.265	11,422
Silver	7440-22-4	Lead Frame	0.751	0.174	7,505
Silicon	7440-21-3	Lead Frame	0.202	0.047	2,024
Magnesium	7439-95-4	Lead Frame	0.045	0.010	450
Silver	7440-22-4	Die Attach	0.601	0.139	6,006
Acrylate resins Proprietary	Trade Secret	Die Attach	0.139	0.032	1,386
Treated silica	Trade Secret	Die Attach	0.015	0.004	154
Heterocyclic organic compound	Trade Secret	Die Attach	0.015	0.004	154
Silicon	7440-21-3	Chip (Die)	2.800	0.650	28,000
Gold	7440-57-5	Wire Bond	0.680	0.158	6,800
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	22.070	5.120	220,700
		TOTALS:	**100.000**	**23.200**	**1,000,000**

0.0232 g Total Mass

6.66	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**28.71**
	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**	
10.43	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**44.97**
	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**	
0.18	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.77**
	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**	
0.65	**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**

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MICROCHIP

Semiconductor Device Type: P and PA 8 (Lead) PDIP (Small Outline - .300") (C4 / CK)

Termination Base Alloy: Copper Alloy (Cu)

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Fused Silica	60676-86-0	Mold Compound	57.456	279.638	574,560
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	42.723	87,780
Epoxy Resin	Trade Secret	Mold Compound	5.586	27.187	55,860
Phenol Resin	Trade Secret	Mold Compound	5.586	27.187	55,860
SiO2	14808-60-7	Mold Compound	1.995	9.710	19,950
Carbon Black	1333-86-4	Mold Compound	0.399	1.942	3,990
Copper	7440-50-8	Lead Frame	10.031	48.823	100,314
Iron	7439-89-6	Lead Frame	0.247	1.201	2,468
Silver	7440-22-4	Lead Frame	0.200	0.974	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.064	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87
Silver	7440-22-4	Die Attach	0.550	2.678	5,502
Epoxy Resin	9003-36-5	Die Attach	0.110	0.535	1,100
Diluent	3101-60-8	Die Attach	0.055	0.268	550
Phenolic hardener	Trade secret	Die Attach	0.022	0.107	220
Amine type hardener	827-43-0	Die Attach	0.011	0.054	110
Dicyandiamide	461-58-5	Die Attach	0.002	0.009	18
Silicon	7440-21-3	Chip (Die)	7.500	36.503	75,000
Doped Gold	7440-57-5	Wire Bond	0.200	0.973	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500
		TOTALS:	**100.000**	**486.700**	**1,000,000**

0.4867 g Total Mass

388.39	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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
	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
	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	(mg) Total	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.97	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
		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
	Tin	7440-31-5	100.00	
		Total	**100.00**	

486.700				100.000

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MICROCHIP

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
Fused Silica	60676-86-0	Mold Compound	57.456	547.728	574,560
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	83.681	87,780
Epoxy Resin	Trade Secret	Mold Compound	5.586	53.251	55,860
Phenol Resin	Trade Secret	Mold Compound	5.586	53.251	55,860
SiO2	14808-60-7	Mold Compound	1.995	19.018	19,950
Carbon Black	1333-86-4	Mold Compound	0.399	3.804	3,990
Copper	7440-50-8	Lead Frame	10.031	95.630	100,314
Iron	7439-89-6	Lead Frame	0.247	2.352	2,468
Silver	7440-22-4	Lead Frame	0.200	1.907	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.125	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.083	87
Silver	7440-22-4	Die Attach	0.563	5.362	5,625
Diester Resin	94-80-4	Die Attach	0.113	1.072	1,125
Functionalized Urethane Resin	72869-86-4	Die Attach	0.038	0.357	375
Epoxy Resin	9003-36-5	Die Attach	0.019	0.179	188
Epoxy Resin	13561-08-5	Die Attach	0.019	0.179	188
Silicon	7440-21-3	Chip (Die)	7.500	71.498	75,000
Gold	7440-57-5	Wire Bond	0.200	1.907	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	11.916	12,500
		TOTALS:	**100.000**	**953.300**	**1,000,000**

0.9533 g Total Mass

760.73	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**	

100.10	(mg) Total	Lead Frame	% of Total Weight	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**	

7.15	(mg) Total	Die Attach	% of Total Weight	0.75
	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**	

71.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

1.91	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

11.92	(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**	

953.300				100.000

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MICROCHIP

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

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
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

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

748.83	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**67.3**
	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**	
342.70	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**30.8**
	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**	
0.78	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.07**
	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**

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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MICROCHIP

Semiconductor Device Type: P 18 (Lead) PDIP .300" (F3 / FP)

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Fused Silica	60676-86-0	Mold Compound	57.456	717.051	574,560
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**

1.2480 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

995.90	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**	

131.04	(mg) Total	Lead Frame	% of Total Weight	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**	

9.36	(mg) Total	Die Attach	% of Total Weight	0.75
	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**

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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MICROCHIP

Semiconductor Device Type: P 20 (Lead) PDIP .300" (G6 / GV)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Fused Silica	60676-86-0	Mold Compound	49.752	752.683	497,520
Metal Hydro Oxide	Trade Secret	Mold Compound	7.601	114.993	76,010
Epoxy Resin	Trade Secret	Mold Compound	4.837	73.178	48,370
Phenol Resin	Trade Secret	Mold Compound	4.837	73.178	48,370
SiO2	14808-60-7	Mold Compound	1.728	26.135	17,275
Carbon Black	1333-86-4	Mold Compound	0.346	5.227	3,455
Copper	7440-50-8	Lead Frame	27.687	418.865	276,868
Iron	7439-89-6	Lead Frame	0.681	10.303	6,810
Silver	7440-22-4	Lead Frame	0.552	8.352	5,521
Zinc	7440-66-6	Lead Frame	0.036	0.548	362
Phosphorous	7723-14-0	Lead Frame	0.024	0.362	239
Silver (Ag)	7440-22-4	Die Attach	0.068	1.021	675
Modified Epoxy Resin	13561-08-5	Die Attach	0.013	0.191	126
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.007	0.102	68
Modified Amine	827-43-0	Die Attach	0.003	0.048	32
Silicon	7440-21-3	Chip (Die)	0.300	4.539	3,000
Gold	7440-57-5	Wire Bond	0.020	0.303	200
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.510	22.844	15,100
		TOTALS:	**100.000**	**1,512.870**	**1,000,000**

1.5129 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

1045.39	(mg) Total	Mold Compound	% ot Total Weight	69.1
	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**	

438.43	(mg) Total	Lead Frame	% of Total Weight	28.98
	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**	

1.36	(mg) Total	Die Attach	% of Total Weight	0.09
	Silver (Ag)	7440-22-4	75	
	Modified Epoxy Resin	13561-08-5	14	
	Diglycidylether of bisphenol-	54208-63-8	8	
	Modified Amine	827-43-0	4	
		Total	**100.00**	

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**

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MICROCHIP

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
Silica, vitreous	60676-86-0	Mold Compound	58.191	1076.958	581,910
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.193	77.604	41,932
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.193	77.604	41,932
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.677	31.042	16,773
Carbon Black	1333-86-4	Mold Compound	0.205	3.801	2,054
Copper	7440-50-8	Lead Frame	27.830	515.060	278,301
Iron	7439-89-6	Lead Frame	0.685	12.669	6,846
Silver	7440-22-4	Lead Frame	0.555	10.270	5,549
Zinc	7440-66-6	Lead Frame	0.036	0.674	364
Phosphorous	7723-14-0	Lead Frame	0.024	0.445	240
Silver	7440-22-4	Die Attach	0.104	1.917	1,036
Epoxy resin	Trade Secret	Die Attach	0.032	0.596	322
Gamma-butyrolactone	96-48-0	Die Attach	0.004	0.078	42
Silicon	7440-21-3	Chip (Die)	0.750	13.880	7,500
Gold	7440-57-5	Wire Bond	0.030	0.555	300
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.490	27.576	14,900
		TOTALS:	**100.000**	**1,850.730**	**1,000,000**

1.8507 g Total Mass

1267.01	(mg) Total	Mold Compound	% ot Total Weight	68.46
	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**	

539.12	(mg) Total	Lead Frame	% of Total Weight	29.13
	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**	

2.59	(mg) Total	Die Attach	% of Total Weight	0.14
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	23	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	

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**

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MICROCHIP

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
Fused Silica	60676-86-0	Mold Compound	57.456	2336.563	574,560
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	356.975	87,780
Epoxy Resin	Trade Secret	Mold Compound	5.586	227.166	55,860
Phenol Resin	Trade Secret	Mold Compound	5.586	227.166	55,860
SiO2	14808-60-7	Mold Compound	1.995	81.131	19,950
Carbon Black	1333-86-4	Mold Compound	0.399	16.226	3,990
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

3245.23	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.8**
	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**	
424.97	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.45**
	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**
	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**
	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**

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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MICROCHIP

Semiconductor Device Type: PHE 32 (Lead) PDIP (Wide Outline - .600") (P2)

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	72.820	3806.712	728,195
Epoxy Resin	Trade Secret	Mold Compound	5.247	274.307	52,473
Phenolic Resin	Trade Secret	Mold Compound	5.247	274.307	52,473
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	2.099	109.723	20,989
Carbon Black	1333-86-4	Mold Compound	0.257	13.435	2,570
Copper	7440-50-8	Lead Frame	12.783	668.240	127,829
Iron	7439-89-6	Lead Frame	0.314	16.437	3,144
Silver	7440-22-4	Lead Frame	0.255	13.325	2,549
Zinc	7440-66-6	Lead Frame	0.017	0.874	167
Phosphorous	7723-14-0	Lead Frame	0.011	0.577	110
Silver (Ag)	7440-22-4	Die Attach	0.128	6.691	1,280
Epoxy Resin	Trade Secret	Die Attach	0.027	1.422	272
Copper (Cu)	7440-50-8	Die Attach	0.005	0.251	48
Doped Silicon	7440-21-3	Chip (Die)	0.220	11.501	2,200
Doped Gold	7440-57-5	Wire Bond	0.030	1.568	300
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.540	28.229	5,400
		TOTALS:	**100.000**	**5,227.600**	**1,000,000**

5.2276 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

4478.48	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**85.67**
	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**	
699.45	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**13.38**
	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**	
8.36	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.16**
	Silver (Ag)	7440-22-4	80.00	
	Epoxy Resin	Trade Secret	17.00	
	Copper (Cu)	7440-50-8	3.00	
		Total	**100.00**	
11.50	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**0.22**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
1.57	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.03**
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	
28.23	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**0.54**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
5,227.600				**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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MICROCHIP

Semiconductor Device Type: P and PL 40 (Lead) PDIP (Wide Outline - .600") (S2 / SL)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Fused Silica	60676-86-0	Mold Compound	57.456	3734.640	574,560
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	570.570	87,780
Epoxy Resin	Trade Secret	Mold Compound	5.586	363.090	55,860
Phenol Resin	Trade Secret	Mold Compound	5.586	363.090	55,860
SiO2	14808-60-7	Mold Compound	1.995	129.675	19,950
Carbon Black	1333-86-4	Mold Compound	0.399	25.935	3,990
Copper	7440-50-8	Lead Frame	9.984	648.938	99,837
Iron	7439-89-6	Lead Frame	0.246	15.962	2,456
Silver	7440-22-4	Lead Frame	0.199	12.940	1,991
Zinc	7440-66-6	Lead Frame	0.013	0.849	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.560	86
Polyimide	25038-81-7	Lead Frame	0.022	1.398	215
Poly - ethylene – terephthalate	25038-59-9	Lead Frame	0.019	1.235	190
NBR	9003-18-3	Lead Frame	0.004	0.228	35
Bismaleimide	79922-55-7	Lead Frame	0.003	0.195	30
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.195	30
Silver	7440-22-4	Die Attach	0.550	35.763	5,502
Epoxy Resin	9003-36-5	Die Attach	0.110	7.152	1,100
Diluent	3101-60-8	Die Attach	0.055	3.573	550
Phenolic hardener	Trade secret	Die Attach	0.022	1.428	220
Amine type hardener	827-43-0	Die Attach	0.011	0.717	110
Dicyandiamide	461-58-5	Die Attach	0.002	0.117	18
Silicon	7440-21-3	Chip (Die)	7.500	487.500	75,000
Gold	7440-57-5	Wire Bond	0.200	13.000	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	81.250	12,500
		TOTALS:	**100.000**	**6,500.000**	**1,000,000**

6.5000 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

5187.00	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.8**
	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**	
679.25	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.45**
	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**	
3.25	**(mg) Total**	**Lead Lock Tape**	**% of Total Weight**	**0.05**
	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**	
48.75	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	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**	
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				**100.000**

MICROCHIP

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
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	183.241	87,780
Epoxy Resin	Trade Secret	Mold Compound	5.586	116.608	55,860
Phenol Resin	Trade Secret	Mold Compound	5.586	116.608	55,860
SiO2	14808-60-7	Mold Compound	1.995	41.646	19,950
Carbon Black	1333-86-4	Mold Compound	0.399	8.329	3,990
Copper	7440-50-8	Lead Frame	9.984	208.409	99,837
Iron	7439-89-6	Lead Frame	0.246	5.126	2,456
Silver	7440-22-4	Lead Frame	0.199	4.156	1,991
Zinc	7440-66-6	Lead Frame	0.013	0.273	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.180	86
Polyimide	25038-81-7	Lead Frame	0.022	0.449	215
Poly - ethylene – terephthalate	25038-59-9	Lead Frame	0.019	0.397	190
NBR	9003-18-3	Lead Frame	0.004	0.073	35
Bismaleimide	79922-55-7	Lead Frame	0.003	0.063	30
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.063	30
Silver	7440-22-4	Die Attach	0.550	11.485	5,502
Epoxy Resin	9003-36-5	Die Attach	0.110	2.297	1,100
Diluent	3101-60-8	Die Attach	0.055	1.148	550
Phenolic hardener	Trade secret	Die Attach	0.022	0.459	220
Amine type hardener	827-43-0	Die Attach	0.011	0.230	110
Dicyandiamide	461-58-5	Die Attach	0.002	0.038	18
Silicon	7440-21-3	Chip (Die)	7.500	156.563	75,000
Gold	7440-57-5	Wire Bond	0.200	4.175	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	26.094	12,500
		TOTALS:	**100.000**	**2,087.500**	**1,000,000**

2.0875 g Total Mass

1665.83	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.8**
	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**
	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**
	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**
	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**

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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MICROCHIP

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
Silica, vitreous	60676-86-0	Mold Compound	60.886	695.635	608,855
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.387	50.127	43,873
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.387	50.127	43,873
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.755	20.051	17,549
Carbon Black	1333-86-4	Mold Compound	0.215	2.455	2,149
Copper	7440-50-8	Lead Frame	25.115	286.945	251,148
Silver	7440-22-4	Lead Frame	0.488	5.578	4,883
Zirconium	7440-67-7	Lead Frame	0.026	0.293	256
Manganese	7439-96-5	Lead Frame	0.001	0.015	13
Silver	7440-22-4	Die Attach	0.163	1.860	1,628
Epoxy resin	Trade Secret	Die Attach	0.051	0.578	506
Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.075	66
Silicon	7440-21-3	Chip (Die)	1.210	13.825	12,100
Gold	7440-57-5	Wire Bond	0.070	0.800	700
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.240	14.167	12,400
		TOTALS:	**100.000**	**1,142.530**	**1,000,000**

1.1425 g Total Mass

818.39	(mg) Total	Mold Compound	% ot Total Weight	71.63
	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**	

292.83	(mg) Total	Lead Frame	% of Total Weight	25.63
	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**	

2.51	(mg) Total	Die Attach	% of Total Weight	0.22
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	23	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	

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**

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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MICROCHIP

Semiconductor Device Type: NHE 32 (Lead) PLCC (P3)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	51.000	575.790	510,000
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	41.491	36,750
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	41.491	36,750
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.470	16.596	14,700
Carbon Black	1333-86-4	Mold Compound	0.180	2.032	1,800
Copper (Cu)	7440-50-8	Lead Frame	29.760	335.990	297,600
Nickle (Ni)	7440-02-0	Lead Frame	1.280	14.451	12,800
Silicon (Si)	7440-21-3	Lead Frame	0.320	3.613	3,200
Magnesium (Mg)	7439-95-4	Lead Frame	0.064	0.723	640
Silver (Ag)	7440-22-4	Lead Frame	0.576	6.503	5,760
Silver (Ag)	7440-22-4	Die Attach	0.064	0.723	640
Epoxy Resin	Trade Secret	Die Attach	0.014	0.154	136
Copper (Cu)	7440-50-8	Die Attach	0.002	0.027	24
Silicon	7440-21-3	Chip (Die)	4.820	54.418	48,200
Gold	7440-57-5	Wire Bond	0.100	1.129	1,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	33.870	30,000
		TOTALS:	**100.000**	**1,129.000**	**1,000,000**

1.1290 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

677.40	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**60**
	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**	
361.28	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**32**
	Copper (Cu)	7440-50-8	93.00	
	Nickle (Ni)	7440-02-0	4.00	
	Silicon (Si)	7440-21-3	1.00	
	Magnesium (Mg)	7439-95-4	0.20	
	Silver (Ag)	7440-22-4	1.80	
		Total	**100.00**	
0.90	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.08**
	Silver (Ag)	7440-22-4	80	
	Epoxy Resin	Trade Secret	17	
	Copper (Cu)	7440-50-8	3	
		Total	**100.00**	
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				**100.000**

MICROCHIP

Semiconductor Device Type: L & NJE 44 (Lead) PLCC (T2 / TC)

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	64.685	1536.618	646,850
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.661	110.727	46,611
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.661	110.727	46,611
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.864	44.291	18,645
Carbon Black	1333-86-4	Mold Compound	0.228	5.423	2,283
Copper	7440-50-8	Lead Frame	21.460	509.786	214,598
Silver	7440-22-4	Lead Frame	0.417	9.911	4,172
Zirconium	7440-67-7	Lead Frame	0.022	0.520	219
Manganese	7439-96-5	Lead Frame	0.001	0.026	11
Silver	7440-22-4	Die Attach	0.104	2.461	1,036
Epoxy resin	Trade Secret	Die Attach	0.032	0.765	322
Gamma-butyrolactone	96-48-0	Die Attach	0.004	0.100	42
Silicon	7440-21-3	Chip (Die)	0.870	20.667	8,700
Gold	7440-57-5	Wire Bond	0.050	1.188	500
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.940	22.330	9,400
		TOTALS:	**100.000**	**2,375.540**	**1,000,000**

2.3755 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

1807.79	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**76.1**
	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	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**21.9**
	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	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.14**
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	23	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	
20.67	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**0.87**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
1.19	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.05**
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
22.33	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**0.94**
	Tim	7440-31-5	100.00	
		Total	**100.00**	
2,375.540				**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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MICROCHIP

Semiconductor Device Type: L 68 (Lead) PLCC (W2 / WF)

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	24.038	1173.054	240,380
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	1.732	84.529	17,322
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	1.732	84.529	17,322
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.693	33.812	6,929
Carbon Black	1333-86-4	Mold Compound	0.085	4.140	848
Copper	7440-50-8	Lead Frame	22.087	1077.843	220,869
Silver	7440-22-4	Lead Frame	0.429	20.954	4,294
Zirconium	7440-67-7	Lead Frame	0.023	1.100	225
Manganese	7439-96-5	Lead Frame	0.001	0.055	11
Silver	7440-22-4	Die Attach	9.983	487.146	99,825
Diester Resin	94-80-4	Die Attach	1.997	97.429	19,965
Functionalized Urethane Resin	72869-86-4	Die Attach	0.666	32.476	6,655
Epoxy Resin	9003-36-5	Die Attach	0.333	16.238	3,328
Epoxy Resin	13561-08-5	Die Attach	0.333	16.238	3,328
Silicon	7440-21-3	Chip (Die)	12.310	600.728	123,100
Gold	7440-57-5	Wire Bond	5.120	249.856	51,200
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	18.440	899.872	184,400
		TOTALS:	**100.000**	**4,880.000**	**1,000,000**

4.8800 g Total Mass

1380.06	(mg) Total	Mold Compound	% ot Total Weight	28.28
	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	(mg) Total	Lead Frame	% of Total Weight	22.54
	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	(mg) Total	Die Attach	% of Total Weight	13.31
	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	Total (mg)	Chip (Die)	% of Total Weight	12.31
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

249.86	(mg) Total	Wire Bond	% of Total Weight	5.12
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

899.87	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	18.44
	Tin	7440-31-5	100.00	
		Total	**100.00**	

4,880.000 **100.000**

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MICROCHIP

Semiconductor Device Type: AI2 10 QFN 1.3x1.8x0.55 2V

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
Silica, fused	60676-86-0	Mold Compound	33.030	3.633	330,300
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.780	0.196	17,800
Phenolic Resin	Trade Secret	Mold Compound	1.780	0.196	17,800
Carbon Black	1333-86-4	Mold Compound	0.110	0.012	1,101
Copper	7440-50-8	Lead Frame	39.239	4.316	392,393
Nickel	7440-02-0	Lead Frame	1.046	0.115	10,465
Silicon	7440-21-3	Lead Frame	0.185	0.020	1,854
Magnesium	7439-95-4	Lead Frame	0.041	0.005	412
Silver	7440-22-4	Lead Frame	0.688	0.076	6,876
Aluminum oxide	1344-28-1	Die Attach	0.068	0.008	683
Diethylene glycol monoethyl ether acetate	112-15-2	Die Attach	0.068	0.008	683
Epoxy resin (Trade Secret - 10114)	Trade Secret	Die Attach	0.037	0.004	373
Epoxy resin (Trade Secret - 10105)	Trade Secret	Die Attach	0.019	0.002	186
Amine (Trade Secret - 10039)	Trade Secret	Die Attach	0.007	0.001	75
Silicon	7440-21-3	Chip (Die)	14.000	1.540	140,000
Doped Gold	7440-57-5	Wire Bond	6.000	0.660	60,000
Tin	7440-31-5	Plating on external leads (pins)	1.815	0.200	18,145
Silver	7440-22-4	Plating on external leads (pins)	0.076	0.008	760
Copper	7440-50-8	Plating on external leads (pins)	0.010	0.001	95
		TOTALS:	**100.000**	**11.000**	**1,000,000**

0.0110 g Total Mass

4.04	(mg) Total	Mold Compound	% ot Total Weight	36.7
	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**	

4.53	(mg) Total	Lead Frame	% of Total Weight	41.2
	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**	

0.02	(mg) Total	Die Attach	% of Total Weight	0.2
	Aluminum oxide	1344-28-1	34.16	
Diethylene glycol monoethyl ether acetate		112-15-2	34.16	
	Epoxy resin (Trade Secret - 10114)		18.63	
	Epoxy resin (Trade Secret - 10105)		9.32	
	Amine (Trade Secret - 10039)		4	
		Total	**100.00**	

1.54	(mg) Total	Chip (Die)	% of Total Weight	14
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.66	(mg) Total	Wire Bond	% of Total Weight	6
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	

0.21	(mg) Total	Plating on external leads (pins)	% of Total Weight	1.9
	Tin	7440-31-5	95.50	
	Silver	7440-22-4	4.00	
	Copper	7440-50-8	0.50	
		Total	**100.00**	

11.00 100.00

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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MICROCHIP

Semiconductor Device Type: KP QFN 12 4x4x0.9 UH

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	9.126	2.320	91,260
Epoxy Resin	Trade Secret	Mold Compound	0.492	0.125	4,918
Phenolic Resin	Trade Secret	Mold Compound	0.492	0.125	4,918
Carbon Black	1333-86-4	Mold Compound	0.030	0.008	304
Copper	7440-50-8	Lead Frame	74.777	19.008	747,772
Iron	7439-89-6	Lead Frame	1.839	0.468	18,393
Silver	7440-22-4	Lead Frame	1.491	0.379	14,910
Zinc	7440-66-6	Lead Frame	0.098	0.025	978
Phosphorous	7723-14-0	Lead Frame	0.065	0.016	646
Silver	7440-22-4	Die Attach	0.518	0.132	5,180
Epoxy resin	68475-94-5	Die Attach	0.140	0.036	1,400
Copper(II) oxide	1317-38-0	Die Attach	0.021	0.005	210
Gamma-butyrolactone	96-48-0	Die Attach	0.021	0.005	210
Silicon	7440-21-3	Chip (Die)	6.710	1.706	67,100
Copper	7440-50-8	Wire Bond	0.206	0.052	2,063
Palladium	7440-05-3	Wire Bond	0.004	0.001	37
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.970	1.009	39,700
		TOTALS:	**100.000**	**25.420**	**1,000,000**

0.0254 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

2.58	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**10.14**
	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**	
19.90	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**78.27**
	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**	
0.18	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.7**
	Silver	7440-22-4	74.00	
	Epoxy resin	68475-94-5	20.00	
	Copper(II) oxide	1317-38-0	3.00	
	Gamma-butyrolactone	96-48-0	3.00	
		Total	**100.00**	
1.71	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**6.71**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.05	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.21**
	Copper	7440-50-8	98.25	
	Palladium	7440-05-3	1.75	
		Total	**100.00**	
1.01	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**3.97**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
25.420				**100.000**

MICROCHIP

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
Silica, fused	60676-86-0	Mold Compound	57.438	12.407	574,380
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.095	0.669	30,953
Phenolic Resin	Trade Secret	Mold Compound	3.095	0.669	30,953
Carbon Black	1333-86-4	Mold Compound	0.191	0.041	1,915
Copper	7440-50-8	Lead Frame	22.289	4.814	222,889
Iron	7439-89-6	Lead Frame	0.548	0.118	5,483
Silver	7440-22-4	Lead Frame	0.444	0.096	4,444
Zinc	7440-66-6	Lead Frame	0.029	0.006	292
Phosphorous	7723-14-0	Lead Frame	0.019	0.004	192
Silver	7440-22-4	Die Attach	0.273	0.059	2,730
Acrylate resins Proprietary	Trade Secret	Die Attach	0.063	0.014	630
Treated silica	Trade Secret	Die Attach	0.007	0.002	70
Heterocyclic organic compound	Trade Secret	Die Attach	0.007	0.002	70
Silicon	7440-21-3	Chip (Die)	5.350	1.156	53,500
Gold	7440-57-5	Wire Bond	1.840	0.397	18,400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	5.310	1.147	53,100
		TOTALS:	**100.000**	**21.600**	**1,000,000**

0.0216 g Total Mass

13.79	(mg) Total	Mold Compound	% ot Total Weight	63.82
	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**	

5.04	(mg) Total	Lead Frame	% of Total Weight	23.33
	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**	

0.08	(mg) Total	Die Attach	% of Total Weight	0.35
	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**	

1.16	Total (mg)	Chip (Die)	% of Total Weight	5.35
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.40	(mg) Total	Wire Bond	% of Total Weight	1.84
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

1.15	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	5.31
	Tin	7440-31-5	100.00	
		Total	**100.00**	

21.600 **100.000**

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MICROCHIP

Semiconductor Device Type: ML 16 (Lead) QFN 4x4mm (D5 / DS)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	42.075	17.545	420,750
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.267	0.945	22,674
Phenolic Resin	Trade Secret	Mold Compound	2.267	0.945	22,674
Carbon Black	1333-86-4	Mold Compound	0.140	0.058	1,403
Copper	7440-50-8	Lead Frame	38.511	16.059	385,112
Iron	7439-89-6	Lead Frame	0.947	0.395	9,473
Silver	7440-22-4	Lead Frame	0.768	0.320	7,679
Zinc	7440-66-6	Lead Frame	0.050	0.021	504
Phosphorous	7723-14-0	Lead Frame	0.033	0.014	333
Silver	7440-22-4	Die Attach	1.022	0.426	10,218
Acrylate resins Proprietary	Trade Secret	Die Attach	0.236	0.098	2,358
Treated silica	Trade Secret	Die Attach	0.026	0.011	262
Heterocyclic organic compound	Trade Secret	Die Attach	0.026	0.011	262
Silicon	7440-21-3	Chip (Die)	7.890	3.290	78,900
Gold	7440-57-5	Wire Bond	0.790	0.329	7,900
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	1.230	29,500
		TOTALS:	**100.000**	**41.700**	**1,000,000**

0.0417 g Total Mass

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	% ot Total Weight	46.75
	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**	

16.81	(mg) Total	Lead Frame	% of Total Weight	40.31
	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**	

0.55	(mg) Total	Die Attach	% of Total Weight	1.31
	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**	

3.29	Total (mg)	Chip (Die)	% of Total Weight	7.89
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.33	(mg) Total	Wire Bond	% of Total Weight	0.79
	Doped Gold	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
	Tin	7440-31-5	100.00	
		Total	**100.00**	

41.700 **100.000**

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MICROCHIP

Semiconductor Device Type: ML 20 (Lead) QFN 4x4mm (G4 / GM)

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	46.611	20.080	466,110
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.512	1.082	25,118
Phenolic Resin	Trade Secret	Mold Compound	2.512	1.082	25,118
Carbon Black	1333-86-4	Mold Compound	0.155	0.067	1,554
Copper	7440-50-8	Lead Frame	36.404	15.683	364,040
Tin	7440-31-5	Lead Frame	0.093	0.040	934
Silver	7440-22-4	Lead Frame	0.712	0.307	7,119
Zinc	7440-66-6	Lead Frame	0.067	0.029	673
Chromium	7440-47-3	Lead Frame	0.093	0.040	934
Silver	7440-22-4	Die Attach	1.053	0.454	10,530
Acrylate resins Proprietary	Trade Secret	Die Attach	0.243	0.105	2,430
Treated silica	Trade Secret	Die Attach	0.027	0.012	270
Heterocyclic organic compound	Trade Secret	Die Attach	0.027	0.012	270
Silicon	7440-21-3	Chip (Die)	4.410	1.900	44,100
Gold	7440-57-5	Wire Bond	0.640	0.276	6,400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.440	1.913	44,400
		TOTALS:	**100.000**	**43.080**	**1,000,000**

0.04308 g Total Mass

22.31	(mg) Total	Mold Compound	% ot Total Weight	51.79
	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**	

16.10	(mg) Total	Lead Frame	% of Total Weight	37.37
	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**	

0.58	(mg) Total	Die Attach	% of Total Weight	1.35
	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**	

1.90	Total (mg)	Chip (Die)	% of Total Weight	4.41
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.28	(mg) Total	Wire Bond	% of Total Weight	0.64
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

1.91	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.44
	Tin	7440-31-5	100.00	
		Total	**100.00**	

43.080 **100.000**

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MICROCHIP

Semiconductor Device Type: MQ 20 (Lead) QFN 5x5x0.9mm (P8)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	47.619	31.967	476,190
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.566	1.723	25,661
Phenolic Resin	Trade Secret	Mold Compound	2.566	1.723	25,661
Carbon Black	1333-86-4	Mold Compound	0.159	0.107	1,587
Copper	7440-50-8	Lead Frame	35.362	23.738	353,616
Tin	7440-31-5	Lead Frame	0.091	0.061	908
Silver	7440-22-4	Lead Frame	0.692	0.464	6,915
Zinc	7440-66-6	Lead Frame	0.065	0.044	653
Chromium	7440-47-3	Lead Frame	0.091	0.061	908
Silver	7440-22-4	Die Attach	1.412	0.948	14,118
Acrylate resins Proprietary	Trade Secret	Die Attach	0.326	0.219	3,258
Treated silica	Trade Secret	Die Attach	0.036	0.024	362
Heterocyclic organic compound	Trade Secret	Die Attach	0.036	0.024	362
Silicon	7440-21-3	Chip (Die)	4.160	2.793	41,600
Gold	7440-57-5	Wire Bond	0.540	0.363	5,400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	2.873	42,800
		TOTALS:	**100.000**	**67.130**	**1,000,000**

0.06713 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

35.52	(mg) Total	Mold Compound	% ot Total Weight	52.91
	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**	

24.37	(mg) Total	Lead Frame	% of Total Weight	36.3
	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**	

1.22	(mg) Total	Die Attach	% of Total Weight	1.81
	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**	

2.79	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**

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MICROCHIP

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
Silica, fused	60676-86-0	Mold Compound	43.902	19.374	439,020
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
Tin	7440-31-5	Lead Frame	0.095	0.042	955
Silver	7440-22-4	Lead Frame	0.727	0.321	7,273
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
Silicon	7440-21-3	Chip (Die)	6.770	2.988	67,700
Gold	7440-57-5	Wire Bond	0.750	0.331	7,500
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

21.53	(mg) Total	Mold Compound	% ot Total Weight	48.78
	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**	

16.85	(mg) Total	Lead Frame	% of Total Weight	38.18
	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**	

0.55	(mg) Total	Die Attach	% of Total Weight	1.24
	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**	

2.99	Total (mg)	Chip (Die)	% of Total Weight	6.77
	Silicon	7440-21-3	100	
		Total	**100.00**	

0.33	(mg) Total	Wire Bond	% of Total Weight	0.75
	Gold	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
	Tin	7440-31-5	100.00	
		Total	**100.00**	

44.130 **100.000**

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MICROCHIP

Semiconductor Device Type: 28 QFN 5x5x0.9mm (P7)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	38.475	25.586	384,750
Epoxy Resin	Trade Secret	Mold Compound	2.073	1.379	20,734
Phenolic Resin	Trade Secret	Mold Compound	2.073	1.379	20,734
Carbon Black	1333-86-4	Mold Compound	0.128	0.085	1,283
Copper	7440-50-8	Lead Frame	42.249	28.096	422,489
Tin	7440-31-5	Lead Frame	0.108	0.072	1,084
Silver	7440-22-4	Lead Frame	0.826	0.549	8,262
Zinc	7440-66-6	Lead Frame	0.078	0.052	781
Chromium	7440-47-3	Lead Frame	0.108	0.072	1,084
Silver	7440-22-4	Die Attach	1.076	0.716	10,764
Epoxy Resin	Trade Secret	Die Attach	0.304	0.202	3,036
Silicon	7440-21-3	Chip (Die)	8.950	5.952	89,500
Gold	7440-57-5	Wire Bond	1.380	0.918	13,800
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.170	1.443	21,700
		TOTALS:	**100.000**	**66.500**	**1,000,000**

0.0665 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

28.43	(mg) Total	Mold Compound	% ot Total Weight	42.75
	Silica, fused	60676-86-0	90.00	
	Epoxy Resin	500-033-5	4.85	
	Phenolic Resin	Trade Secret	4.85	
	Carbon Black	1333-86-4	0.30	
		Total	**100.00**	

28.84	(mg) Total	Lead Frame	% of Total Weight	43.37
	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**	

0.92	(mg) Total	Die Attach	% of Total Weight	1.38
	Silver	7440-22-4	78.00	
	Epoxy Resin	Trade Secret	22.00	
		Total	**100.00**	

5.95	(mg) Total	Chip (Die)	% of Total Weight	8.95
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.92	(mg) Total	Wire Bond	% of Total Weight	1.38
	Gold	7440-57-5	100.00	
		Total	**100.00**	

1.44	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.17
	Tin	7440-31-5	100.00	
		Total	**100.00**	

66.500 **100.000**

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MICROCHIP

Semiconductor Device Type: ML 28 (Lead) QFN 6x6 mm (M4/MM)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	46.737	47.485	467,370
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2.559	25,186
Phenolic Resin	Trade Secret	Mold Compound	2.519	2.559	25,186
Carbon Black	1333-86-4	Mold Compound	0.156	0.158	1,558
Copper	7440-50-8	Lead Frame	37.885	38.491	378,847
Tin	7440-31-5	Lead Frame	0.097	0.099	972
Silver	7440-22-4	Lead Frame	0.741	0.753	7,409
Zinc	7440-66-6	Lead Frame	0.070	0.071	700
Chromium	7440-47-3	Lead Frame	0.097	0.099	972
Silver	7440-22-4	Die Attach	0.413	0.420	4,134
Acrylate resins Proprietary	Trade Secret	Die Attach	0.095	0.097	954
Treated silica	Trade Secret	Die Attach	0.011	0.011	106
Heterocyclic organic compound	Trade Secret	Die Attach	0.011	0.011	106
Silicon	7440-21-3	Chip (Die)	3.290	3.343	32,900
Gold	7440-57-5	Wire Bond	0.950	0.965	9,500
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.410	4.481	44,100
		TOTALS:	**100.000**	**101.600**	**1,000,000**

0.1016 g Total Mass

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

52.76	(mg) Total	Mold Compound	% ot Total Weight	51.93
	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**	

39.51	(mg) Total	Lead Frame	% of Total Weight	38.89
	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**	

0.54	(mg) Total	Die Attach	% of Total Weight	0.53
	Silver	7440-22-4	78	
	Acrylate resins Proprietary	Trade Secret	18	
	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**

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MICROCHIP

Semiconductor Device Type: ML or MM 28 (Lead) QFN-S 6x6mm (M2/MB)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	46.746	47.494	467,460
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2.559	25,191
Phenolic Resin	Trade Secret	Mold Compound	2.519	2.559	25,191
Carbon Black	1333-86-4	Mold Compound	0.156	0.158	1,558
Copper	7440-50-8	Lead Frame	37.145	37.739	371,450
Iron	7439-89-6	Lead Frame	0.914	0.928	9,137
Silver	7440-22-4	Lead Frame	0.741	0.753	7,407
Zinc	7440-66-6	Lead Frame	0.049	0.049	486
Phosphorous	7723-14-0	Lead Frame	0.032	0.033	321
Silver	7440-22-4	Die Attach	0.391	0.397	3,911
Epoxy Resin	9003-36-5	Die Attach	0.100	0.101	996
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.033	0.034	334
Phenolic hardener	92-88-6	Die Attach	0.002	0.002	16
Butyl cellosolve acetate	112-07-2	Die Attach	0.004	0.004	42
Silicon	7440-21-3	Chip (Die)	3.290	3.343	32,900
Gold	7440-57-5	Wire Bond	0.950	0.965	9,500
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.410	4.481	44,100
		TOTALS:	**100.000**	**101.600**	**1,000,000**

0.1016 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

52.77	(mg) Total	Mold Compound	% ot Total Weight	51.94
	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**	

39.50	(mg) Total	Lead Frame	% of Total Weight	38.88
	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**	

0.54	(mg) Total	Die Attach	% of Total Weight	0.53
	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**	

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**

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MICROCHIP

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
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.184	2.206	21,844
Phenolic Resin	Trade Secret	Mold Compound	2.184	2.206	21,844
Carbon Black	1333-86-4	Mold Compound	0.135	0.136	1,351
Copper	7440-50-8	Lead Frame	46.925	47.394	469,248
Tin	7440-31-5	Lead Frame	0.120	0.122	1,204
Silver	7440-22-4	Lead Frame	0.918	0.927	9,176
Zinc	7440-66-6	Lead Frame	0.087	0.088	867
Chromium	7440-47-3	Lead Frame	0.120	0.122	1,204
Silver	7440-22-4	Die Attach	0.226	0.228	2,262
Acrylate resins Proprietary	Trade Secret	Die Attach	0.052	0.053	522
Treated silica	Trade Secret	Die Attach	0.006	0.006	58
Heterocyclic organic compound	Trade Secret	Die Attach	0.006	0.006	58
Silicon	7440-21-3	Chip (Die)	2.720	2.747	27,200
Gold	7440-57-5	Wire Bond	0.860	0.869	8,600
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.920	2.949	29,200
		TOTALS:	**100.000**	**101.000**	**1,000,000**

0.1010 g Total Mass

45.49	(mg) Total	Mold Compound	% ot Total Weight	45.04
	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**	
48.65	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**48.17**
	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**	
0.29	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.29**
	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**	
2.75	**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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MICROCHIP

Semiconductor Device Type: ML 44 (Lead) QFN 8x8x0.9 mm (T3 / TR)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	35.883	67.604	358,830
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.934	3.643	19,337
Phenolic Resin	Trade Secret	Mold Compound	1.934	3.643	19,337
Carbon Black	1333-86-4	Mold Compound	0.120	0.225	1,196
Copper	7440-50-8	Lead Frame	47.903	90.248	479,025
Iron	7439-89-6	Lead Frame	1.178	2.220	11,783
Silver	7440-22-4	Lead Frame	0.955	1.800	9,552
Zinc	7440-66-6	Lead Frame	0.063	0.118	627
Phosphorous	7723-14-0	Lead Frame	0.041	0.078	414
Silver	7440-22-4	Die Attach	1.186	2.234	11,856
Acrylate resins Proprietary	Trade Secret	Die Attach	0.274	0.515	2,736
Treated silica	Trade Secret	Die Attach	0.030	0.057	304
Heterocyclic organic compound	Trade Secret	Die Attach	0.030	0.057	304
Silicon	7440-21-3	Chip (Die)	4.280	8.064	42,800
Gold	7440-57-5	Wire Bond	0.480	0.904	4,800
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.710	6.990	37,100
		TOTALS:	**100.000**	**188.400**	**1,000,000**

0.1884 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

75.12	(mg) Total	Mold Compound	% ot Total Weight	39.87
	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**	

94.46	(mg) Total	Lead Frame	% of Total Weight	50.14
	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**	

2.86	(mg) Total	Die Attach	% of Total Weight	1.52
	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**	

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**

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MICROCHIP

Semiconductor Device Type: HZH - HN 48 QFN 7x7x0.9 (RS/Y3)

Termination Base Alloy: Copper Alloy (Cu)

Package Homogeneous Materials

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	47.124	62.911	471,240
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.047	4.067	30,466
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.492	3.327	24,922
Carbon Black	1333-86-4	Mold Compound	0.137	0.183	1,373
Copper	7440-50-8	Lead Frame	36.486	48.709	364,858
Iron	7439-89-6	Lead Frame	0.897	1.198	8,975
Silver	7440-22-4	Lead Frame	0.728	0.971	7,275
Zinc	7440-66-6	Lead Frame	0.048	0.064	477
Phosphorous	7723-14-0	Lead Frame	0.032	0.042	315
Silver	7440-22-4	Die Attach	0.600	0.801	6,000
Epoxy Resin	Trade secret	Die Attach	0.080	0.107	800
Diluent	Trade secret	Die Attach	0.080	0.107	800
Hardener	Trade secret	Die Attach	0.040	0.053	400
Silicon	7440-21-3	Chip (Die)	5.720	7.636	57,200
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.941	1.256	9,409
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.029	0.039	291
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.520	2.029	15,200
		TOTALS:	**100.000**	**133.500**	**1,000,000**

0.1335 g Total Mass

70.49	(mg) Total	Mold Compound	% ot Total Weight	52.8
	Silica, vitreous	60676-86-0	89.25	
	Epoxy Resin	Trade Secret	5.77	
	Phenolic Resin	Trade Secret	4.72	
	Carbon Black	1333-86-4	0.26	
		Total	**100.00**	

50.98	(mg) Total	Lead Frame	% of Total Weight	38.19
	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	(mg) Total	Die Attach	% of Total Weight	0.8
	Silver	7440-22-4	75	
	Epoxy Resin	Trade secret	10	
	Diluent	Trade secret	10	
	Hardener	Trade secret	5	
		Total	**100.00**	

7.64	Total (mg)	Chip (Die)	% of Total Weight	5.72
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

1.29	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.97
	Copper	7440-50-8	97	
	Palladium	7440-05-3	3	
		Total	**100.00**	

2.03	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.52
	Tin	7440-31-5	100.00	
		Total	**100.00**	

133.500 **100.000**

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MICROCHIP

Semiconductor Device Type: 64 QFN 9x9x0.9mm (NT)

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	38.353	89.133	383,534
Epoxy Resin	834893-60-6	Mold Compound	3.385	7.866	33,848
Phenolic Resin	628290-34-6	Mold Compound	2.255	5.241	22,550
Carbon Black	1333-86-4	Mold Compound	0.137	0.318	1,368
Copper	7440-50-8	Lead Frame	40.126	93.252	401,258
Iron	7439-89-6	Lead Frame	0.987	2.294	9,870
Silver	7440-22-4	Lead Frame	0.800	1.859	8,001
Zinc	7440-66-6	Lead Frame	0.053	0.122	525
Phosphorous	7723-14-0	Lead Frame	0.035	0.081	347
Silver	7440-22-4	Die Attach	1.863	4.331	18,634
Acrylic Resin	Trade secret	Die Attach	0.206	0.478	2,057
Epoxy Resin	Trade secret	Die Attach	0.061	0.141	605
Acrylate	Trade secret	Die Attach	0.133	0.309	1,331
Polybutadiene derivative & Coplolymer	Trade secret	Die Attach	0.157	0.366	1,573
Silicon	7440-21-3	Chip (Die)	6.000	13.944	60,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.953	2.215	9,530
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.017	0.039	170
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.480	10.412	44,800
		TOTALS:	**100.000**	**232.400**	**1,000,000**

0.2324 g Total Mass

Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

102.56	(mg) Total	Mold Compound	% ot Total Weight	44.13
	Silica, vitreous	60676-86-0	86.91	
	Epoxy Resin	834893-60-6	7.67	
	Phenolic Resin	628290-34-6	5.11	
	Carbon Black	1333-86-4	0.31	
		Total	**100.00**	

97.61	(mg) Total	Lead Frame	% of Total Weight	42
	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**	

5.62	(mg) Total	Die Attach	% of Total Weight	2.42
	Silver	7440-22-4	77	
	Acrylic Resin	Trade secret	9	
	Epoxy Resin	Trade secret	3	
	Acrylate	Trade secret	6	
Polybutadiene derivative & Coplolymer		Trade secret	7	
		Total	**100.00**	

13.94	Total (mg)	Chip (Die)	% of Total Weight	6
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

2.25	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.97
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		Total	**100.00**	

10.41	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.48
	Tin	7440-31-5	100.00	
		Total	**100.00**	

232.400 **100.000**

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MICROCHIP

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
Silica, fused	60676-86-0	Mold Compound	4.032	9.370	40,320
Epoxy Resin	Trade Secret	Mold Compound	0.217	0.505	2,173
Phenolic Resin	Trade Secret	Mold Compound	0.217	0.505	2,173
Carbon Black	1333-86-4	Mold Compound	0.013	0.031	134
Copper	7440-50-8	Lead Frame	40.914	95.085	409,143
Tin	7440-31-5	Lead Frame	0.105	0.244	1,050
Silver	7440-22-4	Lead Frame	0.800	1.859	8,001
Zinc	7440-66-6	Lead Frame	0.076	0.176	756
Chromium	7440-47-3	Lead Frame	0.105	0.244	1,050
Silver	7440-22-4	Die Attach	1.888	4.387	18,876
Acrylate resins Proprietary	Trade Secret	Die Attach	0.436	1.012	4,356
Treated silica	Trade Secret	Die Attach	0.048	0.112	484
Heterocyclic organic compound	Trade Secret	Die Attach	0.048	0.112	484
Silicon	7440-21-3	Chip (Die)	6.000	13.944	60,000
Gold	7440-57-5	Wire Bond	0.970	2.254	9,700
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	44.130	102.558	441,300
		TOTALS:	**100.000**	**232.400**	**1,000,000**

0.2324 g Total Mass

10.41	(mg) Total	Mold Compound	% ot Total Weight	4.48
	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**	

97.61	(mg) Total	Lead Frame	% of Total Weight	42
	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**	

5.62	(mg) Total	Die Attach	% of Total Weight	2.42
	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**	

13.94	Total (mg)	Chip (Die)	% of Total Weight	6
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

2.25	(mg) Total	Wire Bond	% of Total Weight	0.97
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

102.56	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	44.13
	Tin	7440-31-5	100.00	
		Total	**100.00**	

232.400 **100.000**

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MICROCHIP

Semiconductor Device Type: LZY 132 DQFN 11x11x0.85mm (NB)

Termination Base Alloy: Copper Alloy (Cu)

Package Homogeneous Materials

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	29.733	30.328	297,330
Epoxy Resin	Trade Secret	Mold Compound	3.043	3.104	30,433
Phenolic Resin	Trade Secret	Mold Compound	2.099	2.141	20,988
Carbon Black	1333-86-4	Mold Compound	0.105	0.107	1,049
Copper	7440-50-8	Lead Frame	52.765	53.821	527,654
Iron	7439-89-6	Lead Frame	1.298	1.324	12,979
Silver	7440-22-4	Lead Frame	1.052	1.073	10,521
Zinc	7440-66-6	Lead Frame	0.069	0.070	690
Phosphorous	7723-14-0	Lead Frame	0.046	0.046	456
Silver	7440-22-4	Die Attach	1.009	1.029	10,087
Epoxy resin	68475-94-5	Die Attach	0.262	0.267	2,620
Copper(II) oxide	1317-38-0	Die Attach	0.039	0.040	393
Silicon	7440-21-3	Chip (Die)	6.120	6.242	61,200
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.432	0.441	4,323
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.008	0.008	77
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.920	1.958	19,200
		TOTALS:	**100.000**	**102.000**	**1,000,000**

0.1020 g Total Mass

35.68	(mg) Total	Mold Compound	% ot Total Weight	34.98
	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**	

56.33	(mg) Total	Lead Frame	% of Total Weight	55.23
	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**	

1.34	(mg) Total	Die Attach	% of Total Weight	1.31
	Silver	7440-22-4	77	
	Epoxy resin	68475-94-5	20	
	Copper(II) oxide	1317-38-0	3	
		Total	**100.00**	

6.24	Total (mg)	Chip (Die)	% of Total Weight	6.12
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.45	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.44
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		Total	**100.00**	

1.96	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.92
	Tin	7440-31-5	100.00	
		Total	**100.00**	

102.000 **100.000**

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MICROCHIP

Semiconductor Device Type: QU6E 06 (Lead) UQFN 3x1.6x0.55mm (QU)

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	18.225	1.221	182,250
Epoxy Resin	Trade Secret	Mold Compound	0.982	0.066	9,821
Phenolic Resin	Trade Secret	Mold Compound	0.982	0.066	9,821
Carbon Black	1333-86-4	Mold Compound	0.061	0.004	608
Copper	7440-50-8	Lead Frame	69.935	4.686	699,355
Nickel	7440-02-0	Lead Frame	1.865	0.125	18,651
Silicon	7440-21-3	Lead Frame	0.330	0.022	3,304
Magnesium	7439-95-4	Lead Frame	0.073	0.005	734
Silver	7440-22-4	Lead Frame	1.226	0.082	12,255
Ag	7440-22-4	Die Attach	1.710	0.115	17,100
Epoxy resin	Trade secret	Die Attach	0.342	0.023	3,420
Aliphatic anhydride	Trade secret	Die Attach	0.114	0.008	1,140
2-Butoxyethyl acetate	112-07-2	Die Attach	0.057	0.004	570
Polymeric material	Trade secret	Die Attach	0.057	0.004	570
Silicon	1303-00-0	Chip (Die)	2.120	0.142	21,200
Doped Gold	7440-57-5	Wire Bond	0.540	0.036	5,400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.380	0.092	13,800
		TOTALS:	**100.000**	**6.700**	**1,000,000**

0.0067 g Total Mass

1.36	(mg) Total	Mold Compound	% ot Total Weight	20.25
	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
	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
	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
	GaAs	1303-00-0	100	
		Total	**100.00**	

0.04	(mg) Total	Wire Bond	% of Total Weight	0.54
	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	7440-31-5	100.00	
		Total	**100.00**	

6.700 **100.000**

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MICROCHIP

Semiconductor Device Type: NA 10 UDFN 3x3x0.5mm (RB)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	30.672	3.619	306,720
Epoxy Resin	Trade Secret	Mold Compound	1.653	0.195	16,529
Phenolic Resin	Trade Secret	Mold Compound	1.653	0.195	16,529
Carbon Black	1333-86-4	Mold Compound	0.102	0.012	1,022
Copper	7440-50-8	Lead Frame	43.363	5.117	433,632
Nickel	7440-02-0	Lead Frame	1.156	0.136	11,565
Silicon	7440-21-3	Lead Frame	0.205	0.024	2,049
Magnesium	7439-95-4	Lead Frame	0.046	0.005	455
Silver	7440-22-4	Lead Frame	0.760	0.090	7,599
Silver	7440-22-4	Die Attach	2.200	0.260	21,996
Acrylate resins Proprietary	Trade Secret	Die Attach	0.508	0.060	5,076
Treated silica	Trade Secret	Die Attach	0.056	0.007	564
Heterocyclic organic compound	Trade Secret	Die Attach	0.056	0.007	564
Silicon	7440-21-3	Chip (Die)	14.370	1.696	143,700
Gold	7440-57-5	Wire Bond	1.060	0.125	10,600
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.140	0.253	21,400
		TOTALS:	**100.000**	**11.800**	**1,000,000**

0.0118 g Total Mass

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

4.02	(mg) Total	Mold Compound	% ot Total Weight	34.08
	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**	

5.37	(mg) Total	Lead Frame	% of Total Weight	45.53
	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**	

0.33	(mg) Total	Die Attach	% of Total Weight	2.82
	Silver	7440-22-4	78.00	
	Acrylate resins Proprietary	Trade Secret	18.00	
	Treated silica	Trade Secret	2.00	
	Heterocyclic organic compound	Trade Secret	2.00	
		Total	**100.00**	

1.70	(mg) Total	Chip (Die)	% of Total Weight	14.37
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.13	(mg) Total	Wire Bond	% of Total Weight	1.06
	Gold	7440-57-5	100.00	
		Total	**100.00**	

0.25	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.14
	Tin	7440-31-5	100.00	
		Total	**100.00**	

11.800 **100.000**

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MICROCHIP

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
Silica, fused	60676-86-0	Mold Compound	30.672	1.564	306,720
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.653	0.084	16,529
Phenolic Resin	Trade Secret	Mold Compound	1.653	0.084	16,529
Carbon Black	1333-86-4	Mold Compound	0.102	0.005	1,022
Copper	7440-50-8	Lead Frame	43.363	2.212	433,632
Nickel	7440-02-0	Lead Frame	1.156	0.059	11,565
Silicon	7440-21-3	Lead Frame	0.205	0.010	2,049
Magnesium	7439-95-4	Lead Frame	0.046	0.002	455
Silver	7440-22-4	Lead Frame	0.760	0.039	7,599
Silver	7440-22-4	Die Attach	2.256	0.115	22,560
Epoxy Resin	Trade secret	Die Attach	0.564	0.029	5,640
GaAs	1303-00-0	Chip (Die)	14.370	0.733	143,700
Doped Gold	7440-57-5	Wire Bond	1.060	0.054	10,600
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.140	0.109	21,400
		TOTALS:	**100.000**	**5.100**	**1,000,000**

0.0051 g Total Mass

1.74	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**34.08**
	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**	
2.32	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**45.53**
	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**	
0.14	**(mg) Total**	**Die Attach**	**% of Total Weight**	**2.82**
	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade secret	20.00	
		Total	**100.00**	
0.73	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**14.37**
Doped GaAs	GaAs	1303-00-0	100	
		Total	**100.00**	
0.05	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**1.06**
	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**	**2.14**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
5.100				**100.000**

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MICROCHIP

Semiconductor Device Type: QUCE 16 (Lead) UQFN/XDFN 3x3x0.45mm (QR)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	46.791	9.545	467,910
Epoxy Resin	Trade Secret	Mold Compound	2.522	0.514	25,215
Phenolic Resin	Trade Secret	Mold Compound	2.522	0.514	25,215
Carbon Black	1333-86-4	Mold Compound	0.156	0.032	1,560
Copper	7440-50-8	Lead Frame	39.630	8.084	396,298
Nickel	7440-02-0	Lead Frame	1.057	0.216	10,569
Silicon	7440-21-3	Lead Frame	0.187	0.038	1,872
Magnesium	7439-95-4	Lead Frame	0.042	0.008	416
Silver	7440-22-4	Lead Frame	0.694	0.142	6,945
Silver	7440-22-4	Die Attach	0.632	0.129	6,320
Epoxy Resin	Trade secret	Die Attach	0.158	0.032	1,580
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.170	0.443	21,700
Doped Gold	7440-57-5	Wire Bond	0.490	0.100	4,900
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

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

10.61	(mg) Total	Mold Compound	% ot Total Weight	51.99
	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**	

8.49	(mg) Total	Lead Frame	% of Total Weight	41.61
	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**	

0.16	(mg) Total	Die Attach	% of Total Weight	0.79
	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade secret	20.00	
		Total	**100.00**	

0.44	(mg) Total	Chip (Die)	% of Total Weight	2.17
Doped GaAs	Gallium arsenide	1303-00-0	100	
		Total	**100.00**	

0.10	(mg) Total	Wire Bond	% of Total Weight	0.49
	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	2.95
	Tin	7440-31-5	100.00	
		Total	**100.00**	

20.400 **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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MICROCHIP

Semiconductor Device Type: Q3DE 20 (Lead) UQFN 3x3x0.55mm (QD)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	46.413	9.529	464,130
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.501	0.513	25,011
Phenolic Resin	Trade Secret	Mold Compound	2.501	0.513	25,011
Carbon Black	1333-86-4	Mold Compound	0.155	0.032	1,547
Copper	7440-50-8	Lead Frame	39.916	8.195	399,155
Nickel	7440-02-0	Lead Frame	1.065	0.219	10,645
Silver	7440-22-4	Lead Frame	0.699	0.144	6,995
Silicon	7440-21-3	Lead Frame	0.189	0.039	1,886
Magnesium	7439-95-4	Lead Frame	0.042	0.009	419
Silver	7440-22-4	Die Attach	0.656	0.135	6,560
Epoxy Resin	Trade secret	Die Attach	0.164	0.034	1,640
Silicon	7440-21-3	Chip (Die)	2.180	0.448	21,800
Doped Gold	7440-57-5	Wire Bond	0.530	0.109	5,300
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.990	0.614	29,900
		TOTALS:	**100.000**	**20.530**	**1,000,000**

0.02053 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

10.59	(mg) Total	Mold Compound	% ot Total Weight	51.57
	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**	

8.60	(mg) Total	Lead Frame	% of Total Weight	41.91
	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**	

0.17	(mg) Total	Die Attach	% of Total Weight	0.82
	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade secret	20.00	
		Total	**100.00**	

0.45	(mg) Total	Chip (Die)	% of Total Weight	2.18
	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**

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MICROCHIP

Semiconductor Device Type: MV 28 (Lead) UQFN 4x4x0.5mm (R6)

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	41.337	10.789	413,370
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.228	0.581	22,276
Phenolic Resin	Trade Secret	Mold Compound	2.228	0.581	22,276
Carbon Black	1333-86-4	Mold Compound	0.138	0.036	1,378
Copper	7440-50-8	Lead Frame	34.095	8.899	340,953
Tin	7440-31-5	Lead Frame	0.088	0.023	875
Silver	7440-22-4	Lead Frame	0.667	0.174	6,668
Zinc	7440-66-6	Lead Frame	0.063	0.016	630
Chromium	7440-47-3	Lead Frame	0.088	0.023	875
Silver	7440-22-4	Die Attach	1.123	0.293	11,232
Acrylate resins Proprietary	Trade Secret	Die Attach	0.259	0.068	2,592
Treated silica	Trade Secret	Die Attach	0.029	0.008	288
Heterocyclic organic compound	Trade Secret	Die Attach	0.029	0.008	288
Silicon	7440-21-3	Chip (Die)	8.700	2.271	87,000
Gold	7440-57-5	Wire Bond	0.510	0.133	5,100
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	8.420	2.198	84,200
		TOTALS:	**100.000**	**26.100**	**1,000,000**

0.0261 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

11.99	(mg) Total	Mold Compound	% ot Total Weight	45.93
	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**	

9.14	(mg) Total	Lead Frame	% of Total Weight	35
	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**	

0.38	(mg) Total	Die Attach	% of Total Weight	1.44
	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**	

2.27	Total (mg)	Chip (Die)	% of Total Weight	8.7
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.13	(mg) Total	Wire Bond	% of Total Weight	0.51
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

2.20	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.42
	Tin	7440-31-5	100.00	
26.1		**Total**	**100.00**	

100.00

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MICROCHIP

Semiconductor Device Type: MV / MX 28 uQFN 6x6x0.5mm (MQ)

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	38.475	1.120	384,750
Epoxy Resin	500-033-5	Mold Compound	2.073	0.060	20,734
Phenolic Resin	Trade Secret	Mold Compound	2.073	0.060	20,734
Carbon Black	1333-86-4	Mold Compound	0.128	0.004	1,283
Copper	7440-50-8	Lead Frame	42.249	1.229	422,489
Tin	7440-31-5	Lead Frame	0.108	0.003	1,084
Silver	7440-22-4	Lead Frame	0.826	0.024	8,262
Zinc	7440-66-6	Lead Frame	0.078	0.002	781
Chromium	7440-47-3	Lead Frame	0.108	0.003	1,084
Silica, vitreous	60676-86-0	Die Attach	0.483	0.014	4,830
Solid Epoxy Resin	Trade Secret	Die Attach	0.897	0.026	8,970
Silicon	7440-21-3	Chip (Die)	8.950	0.260	89,500
Gold	7440-57-5	Wire Bond	1.380	0.040	13,800
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.170	0.063	21,700
		TOTALS:	**100.000**	**2.910**	**1,000,000**

0.0029 g Total Mass

1.24	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**42.75**
	Silica, fused	60676-86-0	90.00	
	Epoxy Resin	500-033-5	4.85	
	Phenolic Resin	Trade Secret	4.85	
	Carbon Black	1333-86-4	0.30	
		Total	**100.00**	
1.26	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**43.37**
	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**	
0.04	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.38**
	Silica, vitreous	60676-86-0	35.00	
	Solid Epoxy Resin	Trade Secret	65.00	
		Total	**100.00**	
0.26	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**8.95**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.04	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**1.38**
	Gold	7440-57-5	100.00	
		Total	**100.00**	
0.06	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**2.17**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
2.910				**100.000**

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MICROCHIP

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
Silica, fused	60676-86-0	Mold Compound	39.069	16.604	390,690
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.105	0.895	21,054
Phenolic Resin	Trade Secret	Mold Compound	2.105	0.895	21,054
Carbon Black	1333-86-4	Mold Compound	0.130	0.055	1,302
Copper	7440-50-8	Lead Frame	41.966	17.836	419,664
Tin	7440-31-5	Lead Frame	0.108	0.046	1,077
Silver	7440-22-4	Lead Frame	0.821	0.349	8,207
Zinc	7440-66-6	Lead Frame	0.078	0.033	775
Chromium	7440-47-3	Lead Frame	0.108	0.046	1,077
Silver	7440-22-4	Die Attach	1.240	0.527	12,402
Acrylate resins Proprietary	Trade Secret	Die Attach	0.286	0.122	2,862
Treated silica	Trade Secret	Die Attach	0.032	0.014	318
Heterocyclic organic compound	Trade Secret	Die Attach	0.032	0.014	318
Silicon	7440-21-3	Chip (Die)	6.650	2.826	66,500
Gold	7440-57-5	Wire Bond	1.540	0.655	15,400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.730	1.585	37,300
		TOTALS:	**100.000**	**42.500**	**1,000,000**

UTL / Material compilation 0.0425 g Total Mass

18.45	(mg) Total	Mold Compound	% ot Total Weight	43.41
	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**	

18.31	(mg) Total	Lead Frame	% of Total Weight	43.08
	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**	

0.68	(mg) Total	Die Attach	% of Total Weight	1.59
	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**	

2.83	Total (mg)	Chip (Die)	% of Total Weight	6.65
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.65	(mg) Total	Wire Bond	% of Total Weight	1.54
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

1.59	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.73
	Tin	7440-31-5	100.00	
		Total	**100.00**	

42.50 100.00

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MICROCHIP

Semiconductor Device Type: MV UQFN 48 6x6x0.5mm (R7)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	41.067	26.201	410,670
Epoxy Resin	Trade Secret	Mold Compound	2.213	1.412	22,131
Phenolic Resin	Trade Secret	Mold Compound	2.213	1.412	22,131
Carbon Black	1333-86-4	Mold Compound	0.137	0.087	1,369
Copper	7440-50-8	Lead Frame	38.352	24.469	383,523
Tin	7440-31-5	Lead Frame	0.098	0.063	984
Silver	7440-22-4	Lead Frame	0.750	0.478	7,500
Zinc	7440-66-6	Lead Frame	0.071	0.045	709
Chromium	7440-47-3	Lead Frame	0.098	0.063	984
Silver	7440-22-4	Die Attach	1.201	0.766	12,012
Acrylate resins Proprietary	Trade Secret	Die Attach	0.277	0.177	2,772
Treated silica	Trade Secret	Die Attach	0.031	0.020	308
Heterocyclic organic compound	Trade Secret	Die Attach	0.031	0.020	308
Silicon	7440-21-3	Chip (Die)	5.660	3.611	56,600
Gold	7440-57-5	Wire Bond	0.800	0.510	8,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	7.000	4.466	70,000
		TOTALS:	**100.000**	**63.800**	**1,000,000**

0.0638 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

29.11	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**45.63**
	Silica, fused	60676-86-0	90.0000	
	Epoxy Resin	Trade Secret	4.85000	
	Phenolic Resin	Trade Secret	4.85000	
	Carbon Black	1333-86-4	0.30000	
		Total	**100.00**	
25.12	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**39.37**
	Copper	7440-50-8	97.4150	
	Tin	7440-31-5	0.2500	
	Silver	7440-22-4	1.9050	
	Zinc	7440-66-6	0.1800	
	Chromium	7440-47-3	0.2500	
		Total	**100.00**	
0.98	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.54**
	Silver	7440-22-4	78.00	
	Acrylate resins Proprietary	Trade Secret	18.00	
	Treated silica	Trade Secret	2.00	
	Heterocyclic organic compou	Trade Secret	2.00	
		Total	**100.00**	
3.61	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**5.66**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.51	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.80**
	Gold	7440-57-5	100.00	
		Total	**100.00**	
4.47	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**7.00**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
63.800				**100.000**

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MICROCHIP

Semiconductor Device Type: QVCE 16 (Lead) VQFN 3x3x0.9mm (QV)

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	43.095	10.903	430,950
Epoxy Resin	Trade Secret	Mold Compound	4.411	1.116	44,109
Phenolic Resin	Trade Secret	Mold Compound	3.042	0.770	30,420
Carbon Black	1333-86-4	Mold Compound	0.152	0.038	1,521
Copper	7440-50-8	Lead Frame	41.540	10.510	415,397
Iron	7439-89-6	Lead Frame	1.022	0.259	10,218
Silver	7440-22-4	Lead Frame	0.828	0.210	8,283
Zinc	7440-66-6	Lead Frame	0.054	0.014	544
Phosphorous	7723-14-0	Lead Frame	0.036	0.009	359
Silver	7440-22-4	Die Attach	1.360	0.344	13,600
Epoxy Resin	Trade secret	Die Attach	0.340	0.086	3,400
Doped GaAs	1300-00-00	Chip (Die)	1.340	0.339	13,400
Doped Gold	7440-57-5	Wire Bond	0.400	0.101	4,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.380	0.602	23,800
		TOTALS:	**100.000**	**25.300**	**1,000,000**

0.0253 g Total Mass

12.83	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**50.7**
	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**	
11.00	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**43.48**
	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**	
0.43	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.7**
	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade secret	20.00	
		Total	**100.00**	
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**

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MICROCHIP

Semiconductor Device Type: 24 VQFN 4x4x0.9 (RK)

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	23.758	15.324	237,575
Epoxy Resin	Trade Secret	Mold Compound	2.432	1.568	24,317
Phenolic Resin	Trade Secret	Mold Compound	1.677	1.082	16,770
Carbon Black	1333-86-4	Mold Compound	0.084	0.054	839
Copper	7440-50-8	Lead Frame	64.354	41.508	643,541
Iron	7439-89-6	Lead Frame	1.583	1.021	15,830
Silver	7440-22-4	Lead Frame	1.283	0.828	12,832
Zinc	7440-66-6	Lead Frame	0.084	0.054	842
Phosphorous	7723-14-0	Lead Frame	0.056	0.036	556
Silver	7440-22-4	Die Attach	0.170	0.110	1,702
Epoxy resin	9003-36-5	Die Attach	0.046	0.030	460
Copper(II) oxide	1317-38-0	Die Attach	0.007	0.004	69
Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.004	69
Silicon	7440-21-3	Chip (Die)	2.910	1.877	29,100
Copper	7440-50-8	Wire Bond	0.323	0.209	3,234
Palladium	7440-05-3	Wire Bond	0.007	0.004	66
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.220	0.787	12,200
		TOTALS:	**100.000**	**64.500**	**1,000,000**

0.0645 g Total Mass

18.03	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**27.95**
	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**	
43.45	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**67.36**
	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**	**0.23**
	Silver	7440-22-4	74.00	
	Epoxy resin	9003-36-5	20.00	
	Copper(II) oxide	1317-38-0	3.00	
	Gamma-butyrolactone	96-48-0	3.00	
		Total	**100.00**	
1.88	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**2.91**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.21	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.33**
	Copper	7440-50-8	98.00	
	Palladium	7440-05-3	2.00	
		Total	**100.00**	
0.79	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.22**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
64.500				**100.000**

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MICROCHIP

Semiconductor Device Type: 28 VQFN 5x5x0.9 (RM)

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	34.485	22.787	344,845
Epoxy Resin	Trade Secret	Mold Compound	3.530	2.332	35,296
Phenolic Resin	Trade Secret	Mold Compound	2.434	1.608	24,342
Carbon Black	1333-86-4	Mold Compound	0.122	0.080	1,217
Copper	7440-50-8	Lead Frame	50.721	33.515	507,209
Iron	7439-89-6	Lead Frame	1.248	0.824	12,476
Silver	7440-22-4	Lead Frame	1.011	0.668	10,114
Zinc	7440-66-6	Lead Frame	0.066	0.044	664
Phosphorous	7723-14-0	Lead Frame	0.044	0.029	438
Silver	7440-22-4	Die Attach	0.840	0.555	8,400
Epoxy resin	Trade Secret	Die Attach	0.160	0.106	1,600
Silicon	7440-21-3	Chip (Die)	3.290	2.174	32,900
Gold	7440-57-5	Wire Bond	0.470	0.311	4,700
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.580	1.044	15,800
		TOTALS:	**100.000**	**66.078**	**1,000,000**

0.0661 g Total Mass

26.81	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**40.57**
	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**	
35.08	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**53.09**
	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**	
0.66	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1**
	Silver	7440-22-4	84.00	
	Epoxy resin	Trade Secret	16.00	
		Total	**100.00**	
2.17	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**3.29**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.31	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.47**
	Gold	7440-57-5	100.00	
		Total	**100.00**	
1.04	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.58**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
66.078				**100.000**

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MICROCHIP

Semiconductor Device Type: MQ 28 VQFN 5x5x0.9 (MW)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica Fused	60676-86-0	Mold Compound	35.438	34.517	354,379
Epoxy Resin	Trade Secret	Mold Compound	2.085	2.031	20,853
Metal Hydroxide	Trade Secret	Mold Compound	1.250	1.217	12,496
Phenol Resin	Trade Secret	Mold Compound	0.836	0.814	8,357
Phenol Novolac	9003-35-4	Mold Compound	0.836	0.814	8,357
Carbon Black	1333-86-4	Mold Compound	0.126	0.122	1,258
Copper	7440-50-8	Lead Frame	50.721	49.402	507,209
Iron	7439-89-6	Lead Frame	1.248	1.215	12,476
Silver	7440-22-4	Lead Frame	1.011	0.985	10,114
Zinc	7440-66-6	Lead Frame	0.066	0.065	664
Phosphorous	7723-14-0	Lead Frame	0.044	0.043	438
Silver	7440-22-4	Die Attach	0.560	0.545	5,600
Epoxy Resin	Trade Secret	Die Attach	0.140	0.136	1,400
Silicon	7440-21-3	Chip (Die)	3.300	3.214	33,000
Gold	7440-57-5	Wire Bond	0.500	0.487	5,000
Nickel	7440-02-0	Plating on external leads (pins)	1.656	1.613	16,560
Palladium	7440-05-3	Plating on external leads (pins)	0.092	0.090	920
Gold	7440-57-5	Plating on external leads (pins)	0.092	0.090	920
		TOTALS:	**100.000**	**97.400**	**1,000,000**

0.0974 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e4

39.52	(mg) Total	Mold Compound	% ot Total Weight	40.57
	Silica Fused	60676-86-0	87.35	
	Epoxy Resin	Trade Secret	5.14	
	Metal Hydroxide	Trade Secret	3.08	
	Phenol Resin	Trade Secret	2.06	
	Phenol Novolac	9003-35-4	2.06	
	Carbon Black	1333-86-4	0.31	
		Total	**100.00**	

51.71	(mg) Total	Lead Frame	% of Total Weight	53.09
	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**	

0.68	(mg) Total	Die Attach	% of Total Weight	0.7
	Silver	7440-22-4	80	
	Epoxy Resin	Trade Secret	20	
		Total	**100.00**	

3.21	Total (mg)	Chip (Die)	% of Total Weight	3.3
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.49	(mg) Total	Wire Bond	% of Total Weight	0.5
	Gold	7440-57-5	100.00	
		Total	**100.00**	

1.79	(mg) Total	Plating on external leads (pins)	% of Total Weight	1.84
	Nickel	7440-02-0	90.00	
	Palladium	7440-05-3	5.00	
	Gold	7440-57-5	5.00	
		Total	**100.00**	

97.40 100

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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MICROCHIP

Semiconductor Device Type: EZK 32 VQFN 5x5x0.9 (RN)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	24.327	15.472	243,270
Epoxy Resin	Trade Secret	Mold Compound	2.490	1.584	24,899
Phenolic Resin	Trade Secret	Mold Compound	1.717	1.092	17,172
Carbon Black	1333-86-4	Mold Compound	0.086	0.055	859
Copper	7440-50-8	Lead Frame	62.166	39.538	621,663
Iron	7439-89-6	Lead Frame	1.529	0.973	15,291
Silver	7440-22-4	Lead Frame	1.240	0.788	12,396
Zinc	7440-66-6	Lead Frame	0.081	0.052	813
Phosphorous	7723-14-0	Lead Frame	0.054	0.034	537
Silver	7440-22-4	Die Attach	0.363	0.231	3,626
Epoxy resin	Trade Secret	Die Attach	0.098	0.062	980
Metal oxide	Trade Secret	Die Attach	0.015	0.009	147
Gamma-butyrolactone	96-48-0	Die Attach	0.015	0.009	147
Silicon	7440-21-3	Chip (Die)	2.410	1.533	24,100
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.648	0.412	6,485
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.012	0.007	116
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.750	1.749	27,500
		TOTALS:	**100.000**	**63.600**	**1,000,000**

Termination Base Alloy: Copper Alloy (Cu)

0.0636 g Total Mass

Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

18.20	(mg) Total	Mold Compound	% ot Total Weight	28.62
	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**	

41.38	(mg) Total	Lead Frame	% of Total Weight	65.07
	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**	

0.31	(mg) Total	Die Attach	% of Total Weight	0.49
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	

1.53	Total (mg)	Chip (Die)	% of Total Weight	2.41
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.42	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.66
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		Total	**100.00**	

1.75	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.75
	Tin	7440-31-5	100.00	
		Total	**100.00**	

63.600 **100.000**

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MICROCHIP

Semiconductor Device Type: AEZC 36 (Lead) VQFN 6x6x0.9 (RP/RQ)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	14.731	22.184	147,305
Epoxy Resin	Trade Secret	Mold Compound	1.508	2.271	15,077
Phenolic Resin	Trade Secret	Mold Compound	1.040	1.566	10,398
Carbon Black	1333-86-4	Mold Compound	0.052	0.078	520
Copper	7440-50-8	Lead Frame	72.322	108.917	723,219
Iron	7439-89-6	Lead Frame	1.779	2.679	17,790
Silver	7440-22-4	Lead Frame	1.442	2.172	14,421
Zinc	7440-66-6	Lead Frame	0.095	0.143	946
Phosphorous	7723-14-0	Lead Frame	0.062	0.094	625
Silver	7440-22-4	Die Attach	0.143	0.215	1,425
Epoxy resin	Trade Secret	Die Attach	0.048	0.072	475
Silicon	7440-21-3	Chip (Die)	4.210	6.340	42,100
Copper	7440-57-5	Wire Bond	0.764	1.151	7,644
Palladium	7440-05-3	Wire Bond	0.016	0.023	156
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.790	2.696	17,900
		TOTALS:	**100.000**	**150.600**	**1,000,000**

0.1506 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

26.10	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**17.33**
	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**	
114.00	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**75.7**
	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**	
0.29	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.19**
	Silver	7440-22-4	75.00	
	Epoxy resin	Trade Secret	25.00	
		Total	**100.00**	
6.34	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**4.21**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
1.17	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.78**
	Copper	7440-57-5	98.00	
	Palladium	7440-05-3	2.00	
		Total	**100.00**	
2.70	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.79**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
150.600				**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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MICROCHIP

Semiconductor Device Type: 48 VQFN 7x7x0.9 (RS)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	29.529	12.520	295,290
Epoxy Resin	Trade Secret	Mold Compound	3.022	1.281	30,224
Phenolic Resin	Trade Secret	Mold Compound	2.084	0.884	20,844
Carbon Black	1333-86-4	Mold Compound	0.104	0.044	1,042
Copper	7440-50-8	Lead Frame	54.093	22.936	540,933
Iron	7439-89-6	Lead Frame	1.331	0.564	13,306
Silver	7440-22-4	Lead Frame	1.079	0.457	10,786
Zinc	7440-66-6	Lead Frame	0.071	0.030	708
Phosphorous	7723-14-0	Lead Frame	0.047	0.020	467
Silver	7440-22-4	Die Attach	0.969	0.411	9,694
Epoxy resin	Trade Secret	Die Attach	0.301	0.128	3,013
Metal oxide	Trade Secret	Die Attach	0.039	0.017	393
Silicon	7440-21-3	Chip (Die)	4.150	1.760	41,500
Gold	7440-57-5	Wire Bond	1.310	0.555	13,100
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.870	0.793	18,700
		TOTALS:	**100.000**	**42.400**	**1,000,000**

0.0424 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

14.73	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**34.74**
	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**	
24.01	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**56.62**
	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**	
0.56	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.31**
	Silver	7440-22-4	74.00	
	Epoxy resin	Trade Secret	23.00	
	Metal oxide	Trade Secret	3.00	
		Total	**100.00**	
1.76	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**4.15**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.56	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**1.31**
	Gold	7440-57-5	100.00	
		Total	**100.00**	
0.79	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.87**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
42.400				**100.000**

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MICROCHIP

Semiconductor Device Type: ABZJ 56 VQFN 8x8x0.9 (RT)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	34.697	63.308	346,970
Epoxy Resin	Trade Secret	Mold Compound	3.551	6.480	35,513
Phenolic Resin	Trade Secret	Mold Compound	2.449	4.469	24,492
Carbon Black	1333-86-4	Mold Compound	0.122	0.223	1,225
Copper	7440-50-8	Lead Frame	50.558	92.249	505,584
Iron	7439-89-6	Lead Frame	1.244	2.269	12,436
Silver	7440-22-4	Lead Frame	1.008	1.839	10,081
Zinc	7440-66-6	Lead Frame	0.066	0.121	662
Phosphorous	7723-14-0	Lead Frame	0.044	0.080	437
Silver	7440-22-4	Die Attach	0.120	0.219	1,200
Epoxy resin	Trade Secret	Die Attach	0.030	0.055	300
Silicon	7440-21-3	Chip (Die)	2.500	4.562	25,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	1.857	3.388	18,569
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.033	0.060	331
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.720	3.138	17,200
		TOTALS:	**100.000**	**182.460**	**1,000,000**

0.18246 g Total Mass

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Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

74.48	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**40.82**
	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**	
96.56	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**52.92**
	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**	
0.27	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.15**
	Silver	7440-22-4	80	
	Epoxy resin	Trade Secret	20	
		Total	**100.00**	
4.56	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**2.5**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
3.45	**(mg) Total**	**Wire Bond palladium coated copper (CuPd)**	**% of Total Weight**	**1.89**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		Total	**100.00**	
3.14	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.72**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
182.460				**100.000**

MICROCHIP

Semiconductor Device Type: AKZE 72 VQFN 10x10x0.9 (NU)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica Fused	60676-86-0	Mold Compound	40.454	89.242	404,541
Epoxy Resin	Trade Secret	Mold Compound	2.860	6.309	28,598
Phenol Resin	Trade Secret	Mold Compound	2.379	5.247	23,786
Carbon Black	1333-86-4	Mold Compound	0.137	0.303	1,375
Copper	7440-50-8	Lead Frame	48.584	107.176	485,836
Iron	7439-89-6	Lead Frame	1.173	2.587	11,729
Zinc	7440-66-6	Lead Frame	0.062	0.138	624
Silver	7440-22-4	Lead Frame	0.050	0.110	499
Phosphorus	7723-14-0	Lead Frame	0.041	0.091	412
Silver	7440-22-4	Die Attach	0.870	1.919	8,701
Acrylic Resin	Trade secret	Die Attach	0.096	0.212	961
Epoxy Resin	Trade secret	Die Attach	0.028	0.062	283
Acrylated EP-Resin	Trade secret	Die Attach	0.062	0.137	622
Polybutadiene derivative & Coplolymer	Trade secret	Die Attach	0.073	0.162	735
Silicon	7440-21-3	Chip (Die)	2.500	5.515	25,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.265	0.585	2,653
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.005	0.010	47
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.360	0.794	3,600
		TOTALS:	**100.000**	**220.600**	**1,000,000**

0.22060 g Total Mass

Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

101.10	(mg) Total	Mold Compound	% ot Total Weight	45.83
	Silica Fused	60676-86-0	88.27	
	Epoxy Resin	Trade Secret	6.24	
	Phenol Resin	Trade Secret	5.19	
	Carbon Black	1333-86-4	0.30	
		Total	**100.00**	

110.10	(mg) Total	Lead Frame	% of Total Weight	49.91
	Copper	7440-50-8	97.34	
	Iron	7439-89-6	2.35	
	Zinc	7440-66-6	0.13	
	Silver	7440-22-4	0.10	
	Phosphorus	7723-14-0	0.08	
		Total	**100.00**	

2.49	(mg) Total	Die Attach	% of Total Weight	1.13
	Silver	7440-22-4	77.00	
	Acrylic Resin	Trade secret	8.50	
	Epoxy Resin	Trade secret	2.50	
	Acrylated EP-Resin	Trade secret	5.50	
	Polybutadiene derivative & Coplolymer	Trade secret	6.50	
		Total	**100.00**	

5.52	Total (mg)	Chip (Die)	% of Total Weight	2.50
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.60	(mg) Total	Wire Bond palladium coated copper (CuPd)	% of Total Weight	0.27
	Copper	7440-50-8	98	
	Palladium	7440-05-3	1.75	
		Total	**100.00**	

0.79	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.36
	Tin	7440-31-5	100.00	
		Total	**100.00**	

220.600 **100.000**

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MICROCHIP

Semiconductor Device Type: QXBE 12 (Lead) XQFN 2x2x0.45mm (QL)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	54.387	5.493	543,870
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.931	0.296	29,309
Phenolic Resin	Trade Secret	Mold Compound	2.931	0.296	29,309
Carbon Black	1333-86-4	Mold Compound	0.181	0.018	1,813
Copper	7440-50-8	Lead Frame	34.039	3.438	340,391
Nickel	7440-02-0	Lead Frame	0.908	0.092	9,078
Silicon	7440-21-3	Lead Frame	0.161	0.016	1,608
Magnesium	7439-95-4	Lead Frame	0.036	0.004	357
Silver	7440-22-4	Lead Frame	0.597	0.060	5,965
Silver	7440-22-4	Die Attach	0.904	0.091	9,040
Epoxy Resin	Trade secret	Die Attach	0.226	0.023	2,260
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.230	0.124	12,300
Gold	7440-57-5	Wire Bond	0.370	0.037	3,700
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100	0.111	11,000
		TOTALS:	**100.000**	**10.100**	**1,000,000**

0.0101 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

6.10	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**60.43**
	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**	
3.61	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**35.74**
	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**	
0.11	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.13**
	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade secret	20.00	
		Total	**100.00**	
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**

MICROCHIP

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
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
		TOTALS:	**100.000**	**17.720**	**1,000,000**

0.0177 g Total Mass

7.94	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**44.83**
	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**	
8.47	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**47.82**
	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**	
0.16	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.91**
	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade secret	20.00	
		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	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	7440-31-5	100.00	
		Total	**100.00**	
17.720				**100.000**

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MICROCHIP

Semiconductor Device Type: QCF 16 (Lead) WQFN 3x3x0.75mm (3Q)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	39.024	8.546	390,235
Epoxy Resin	Trade Secret	Mold Compound	3.994	0.875	39,942
Phenolic Resin	Trade Secret	Mold Compound	2.755	0.603	27,546
Carbon Black	1333-86-4	Mold Compound	0.138	0.030	1,377
Copper	7440-50-8	Lead Frame	48.494	10.620	484,943
Iron	7439-89-6	Lead Frame	1.146	0.251	11,463
Phosphorous	7723-14-0	Lead Frame	0.125	0.027	1,246
Zinc (Metal)	7440-44-0	Lead Frame	0.075	0.016	748
Silver	7440-22-4	Die Attach	1.529	0.335	15,288
Acrylate resins Proprietary	Trade Secret	Die Attach	0.353	0.077	3,528
Treated silica	Trade Secret	Die Attach	0.039	0.009	392
Heterocyclic organic compound	Trade Secret	Die Attach	0.039	0.009	392
Gallium arsenide	1300-00-00	Chip (Die)	1.550	0.339	15,500
Gold	7440-57-5	Wire Bond	0.460	0.101	4,600
Nickel	7440-02-0	Plating on external leads (pins)	0.265	0.058	2,646
Palladium	7440-05-03	Plating on external leads (pins)	0.014	0.003	140
Gold	7440-57-5	Plating on external leads (pins)	0.001	0.000	14
		TOTALS:	**100.000**	**21.900**	**1,000,000**

0.0219 g Total Mass

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	% ot Total Weight	45.91
	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
	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
	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	7440-05-3	5.00	
	Gold	7440-57-5	0.50	
		Total	**100.00**	
21.900				**100.000**

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MICROCHIP

Semiconductor Device Type: QDE 24 (Lead) WQFN 4x4x0.75 mm (QW)

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
		TOTALS:	**100.000**	**39.200**	**1,000,000**

0.0392 g Total Mass

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**	**% ot Total Weight**	**45.6**
	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**	
19.51	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**49.78**
	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**	
0.43	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.1**
	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	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**0.87**
	Gallium arsenide (GaAs)	1303-00-0	100	
		Total	**100.00**	
0.15	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.38**
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	
0.89	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**2.27**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
39.200				**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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MICROCHIP

Semiconductor Device Type: QR 16 (Lead) QSOP (H5)

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	49.300	41.225	493,000
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.553	2.971	35,525
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.553	2.971	35,525
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.421	1.188	14,210
Carbon Black	1333-86-4	Mold Compound	0.174	0.145	1,740
Copper	7440-50-8	Lead Frame	35.893	30.014	358,934
Iron	7439-89-6	Lead Frame	0.883	0.738	8,829
Silver	7440-22-4	Lead Frame	0.716	0.598	7,157
Zinc	7440-66-6	Lead Frame	0.047	0.039	470
Phosphorous	7723-14-0	Lead Frame	0.031	0.026	310
Silver	7440-22-4	Die Attach	0.222	0.186	2,220
Epoxy resin	Trade Secret	Die Attach	0.060	0.050	600
Metal oxide	Trade Secret	Die Attach	0.009	0.008	90
Gamma-butyrolactone	96-48-0	Die Attach	0.009	0.008	90
Silicon	7440-21-3	Chip (Die)	1.760	1.472	17,600
Gold	7440-57-5	Wire Bond	0.600	0.502	6,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.770	1.480	17,700
		TOTALS:	**100.000**	**83.620**	**1,000,000**

0.0836 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

48.50	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**58**
	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**	
31.42	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**37.57**
	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**	
0.25	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.3**
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	
1.47	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**1.76**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.50	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.6**
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
1.48	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.77**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
83.620				**100.000**

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MICROCHIP

Semiconductor Device Type: OA, SN, TC, SAE 08 (Lead) (SOIC) (Small Outline -150mil) (C2/CC)

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	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
Doped Gold	7440-57-5	Wire Bond	0.200	0.156	2,000
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

62.24	(mg) Total	Mold Compound	% ot Total Weight	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**	

8.19	(mg) Total	Lead Frame	% of Total Weight	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**	

0.59	(mg) Total	Die Attach	% of Total Weight	0.75
	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	(mg) Total	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.16	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
		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**

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MICROCHIP

Semiconductor Device Type: SAF 08 (Lead) SOIC 3.90mm(.150in) (3B)

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	51.000	38.250	510,000
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.756	36,750
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.756	36,750
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.470	1.103	14,700
Carbon Black	1333-86-4	Mold Compound	0.180	0.135	1,800
Copper	7440-50-8	Lead Frame	30.572	22.929	305,720
Iron	7439-89-6	Lead Frame	0.752	0.564	7,520
Silver	7440-22-4	Lead Frame	0.610	0.457	6,096
Zinc	7440-66-6	Lead Frame	0.040	0.030	400
Phosphorous	7723-14-0	Lead Frame	0.026	0.020	264
Silver	7440-22-4	Die Attach	0.059	0.044	592
Epoxy resin	Trade Secret	Die Attach	0.016	0.012	160
Metal oxide	Trade Secret	Die Attach	0.002	0.002	24
Gamma-butyrolactone	96-48-0	Die Attach	0.002	0.002	24
Silicon	7440-21-3	Chip (Die)	4.820	3.615	48,200
Doped Gold	7440-57-5	Wire Bond	0.100	0.075	1,000
Nickel	7440-02-0	Plating on external leads (pins)	2.835	2.126	28,350
Palladium	7440-05-03	Plating on external leads (pins)	0.150	0.113	1,500
Gold	7440-57-5	Plating on external leads (pins)	0.015	0.011	150
		TOTALS:	**100.000**	**75.000**	**1,000,000**

0.0750 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e4

45.00	(mg) Total	Mold Compound	% ot Total Weight	60
	Silica, vitreous	60676-86-0	85.0000	
	Epoxy Resin	Trade Secret	6.1250	
	Phenolic Resin	Trade Secret	6.1250	
	Epoxy, Cresol Novolac	29690-82-2	2.4500	
	Carbon Black	1333-86-4	0.3000	
		Total	**100.00**	

24.00	(mg) Total	Lead Frame	% of Total Weight	32
	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
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	

3.62	(mg) Total	Chip (Die)	% of Total Weight	4.82
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.08	(mg) Total	Wire Bond	% of Total Weight	0.1
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	

2.25	(mg) Total	Plating on external leads (pins)	% of Total Weight	3
	Nickel	7440-02-0	94.50	
	Palladium	7440-05-3	5.00	
	Gold	7440-57-5	0.50	
		Total	**100.00**	

75.00 100.00

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MICROCHIP

Semiconductor Device Type: SL 14 (Lead) SOIC (Small Outline - 150mil) (D3/DG)

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
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 Gold	7440-57-5	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
		TOTALS:	**100.000**	**143.200**	**1,000,000**

0.1432 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

114.27	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**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	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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	**(mg) Total**	**Die Attach**	**% of Total Weight**	**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	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**7.5**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.29	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.2**
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
1.79	**(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**	
143.200				**100.000**

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MICROCHIP

Semiconductor Device Type: TF, F, OE, SO, SL 16 (Lead) SOIC (Wide Outline - 300mil) (D9 / D

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	59.662	261.317	596,615
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.299	18.830	42,991
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.299	18.830	42,991
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.720	7.532	17,197
Carbon Black	1333-86-4	Mold Compound	0.211	0.922	2,106
Copper	7440-50-8	Lead Frame	25.499	111.685	254,990
Iron	7439-89-6	Lead Frame	0.627	2.747	6,272
Silver	7440-22-4	Lead Frame	0.508	2.227	5,084
Zinc	7440-66-6	Lead Frame	0.033	0.146	334
Phosphorous	7723-14-0	Lead Frame	0.022	0.096	220
Silver	7440-22-4	Die Attach	0.370	1.621	3,700
Epoxy resin	Trade Secret	Die Attach	0.100	0.438	1,000
Metal oxide	Trade Secret	Die Attach	0.015	0.066	150
Gamma-butyrolactone	96-48-0	Die Attach	0.015	0.066	150
Silicon	7440-21-3	Chip (Die)	1.850	8.103	18,500
Gold	7440-57-5	Wire Bond	0.090	0.394	900
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.680	2.978	6,800
		TOTALS:	**100.000**	**438.000**	**1,000,000**

0.4380 g Total Mass

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

307.43	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**70.19**
	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**	
116.90	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**26.69**
	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**	
2.19	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.5**
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	
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**

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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MICROCHIP

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

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	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

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**	**% ot Total Weight**	**38.12**
	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**
	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**
	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**

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MICROCHIP

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

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	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	131
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

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	% ot Total Weight	79.8
	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
	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
	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**

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MICROCHIP

Semiconductor Device Type: SO 20 (Lead) SOIC (Wide Outline - 300mil) (G5 / GS)

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	61.064	330.967	610,640
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
Silver	7440-22-4	Lead Frame	0.493	2.673	4,932
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
Silicon	7440-21-3	Chip (Die)	1.150	6.233	11,500
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

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

389.37	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**71.84**
	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**	
140.32	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**25.89**
	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**	
1.84	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.34**
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	
6.23	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**1.15**
	Dope Silicon	7440-21-3	100	
		Total	**100.00**	
0.54	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.1**
	Dope Gold	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**	**% of Total Weight**	**0.68**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
542.000				**100.000**

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MICROCHIP

Semiconductor Device Type: OG 24 (Lead) SOIC (Wide Outline - 300mil) (K3 / KS)

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	59.356	392.933	593,555
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.277	28.314	42,771
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.277	28.314	42,771
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.711	11.326	17,108
Carbon Black	1333-86-4	Mold Compound	0.209	1.387	2,095
Copper	7440-50-8	Lead Frame	25.757	170.511	257,569
Iron	7439-89-6	Lead Frame	0.634	4.194	6,336
Silver	7440-22-4	Lead Frame	0.514	3.400	5,136
Zinc	7440-66-6	Lead Frame	0.034	0.223	337
Phosphorous	7723-14-0	Lead Frame	0.022	0.147	222
Silver	7440-22-4	Die Attach	0.326	2.155	3,256
Epoxy resin	Trade Secret	Die Attach	0.088	0.583	880
Metal oxide	Trade Secret	Die Attach	0.013	0.087	132
Gamma-butyrolactone	96-48-0	Die Attach	0.013	0.087	132
Silicon	7440-21-3	Chip (Die)	2.010	13.306	20,100
Gold	7440-57-5	Wire Bond	0.090	0.596	900
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.670	4.435	6,700
		TOTALS:	**100.000**	**662.000**	**1,000,000**

0.6620 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

462.27	(mg) Total	Mold Compound	% ot Total Weight	69.83
	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**	

178.48	(mg) Total	Lead Frame	% of Total Weight	26.96
	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**	

2.91	(mg) Total	Die Attach	% of Total Weight	0.44
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	

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**

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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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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MICROCHIP

Semiconductor Device Type: SO & OI 28 (Lead) SOIC (Wide Outline - 300mil) (N3 / 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
Silica, vitreous	60676-86-0	Mold Compound	67.830	522.562	678,300
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	37.655	48,878
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	37.655	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	15.062	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	1.844	2,394
Copper	7440-50-8	Lead Frame	10.031	77.282	100,314
Iron	7439-89-6	Lead Frame	0.247	1.901	2,468
Silver	7440-22-4	Lead Frame	0.200	1.541	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.101	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.067	87
Silver (Ag)	7440-22-4	Die Attach	0.563	4.334	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.809	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.433	563
Modified Amine	827-43-0	Die Attach	0.026	0.202	263
Silicon	7440-21-3	Chip (Die)	7.500	57.780	75,000
Gold	7440-57-5	Wire Bond	0.200	1.541	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	9.630	12,500
		TOTALS:	**100.000**	**770.400**	**1,000,000**

0.7704 g Total Mass

614.78	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**	

80.89	(mg) Total	Lead Frame	% of Total Weight	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**	

5.78	(mg) Total	Die Attach	% of Total Weight	0.75
	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**	

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**	

770.400 **100.000**

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MICROCHIP

Semiconductor Device Type: SM, S2AE 08 (Lead) SOIC (208 mil) (C3/CD)

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	67.830	84.381	678,300
Epoxy Resin	Trade Secret	Mold Compound	4.888	6.080	48,878
Phenolic Resin	Trade Secret	Mold Compound	4.888	6.080	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	2.432	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	0.298	2,394
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
Doped Gold	7440-57-5	Wire Bond	0.200	0.249	2,000
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

99.27	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**	

13.06	(mg) Total	Lead Frame	% of Total Weight	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**	

0.93	(mg) Total	Die Attach	% of Total Weight	0.75
	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	(mg) Total	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.25	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
		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**

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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MICROCHIP

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
Silica, vitreous	60676-86-0	Mold Compound	56.347	76.462	563,465
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5.510	40,603
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5.510	40,603
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.624	2.204	16,241
Carbon Black	1333-86-4	Mold Compound	0.199	0.270	1,989
Copper	7440-50-8	Lead Frame	26.540	36.015	265,403
Iron	7439-89-6	Lead Frame	0.653	0.886	6,528
Silver	7440-22-4	Lead Frame	0.529	0.718	5,292
Zinc	7440-66-6	Lead Frame	0.035	0.047	347
Phosphorous	7723-14-0	Lead Frame	0.023	0.031	229
Silver	7440-22-4	Die Attach	0.163	0.221	1,628
Epoxy resin	Trade Secret	Die Attach	0.044	0.060	440
Metal oxide	Trade Secret	Die Attach	0.007	0.009	66
Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.009	66
Silicon	7440-21-3	Chip (Die)	5.410	7.341	54,100
Gold	7440-57-5	Wire Bond	0.150	0.204	1,500
Nickel	7440-02-0	Plating on external leads (pins)(PPF)	0.142	0.192	1,418
Palladium	7440-05-03	Plating on external leads (pins)(PPF)	0.008	0.010	75
Gold	7440-57-5	Plating on external leads (pins)(PPF)	0.001	0.001	8
		TOTALS:	**100.000**	**135.700**	**1,000,000**

0.1357 g Total Mass

89.96	(mg) Total	Mold Compound	% ot Total Weight	66.29
	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**	

37.70	(mg) Total	Lead Frame	% of Total Weight	27.78
	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**	

0.30	(mg) Total	Die Attach	% of Total Weight	0.22
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	

7.34	Total (mg)	Chip (Die)	% of Total Weight	5.41
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.20	(mg) Total	Wire Bond	% of Total Weight	0.15
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

0.20	(mg) Total	Plating on external leads (pins)(PPF)	% of Total Weight	0.15
	Nickel	7440-02-0	94.50	
	Palladium	7440-05-3	5.00	
	Gold	7440-57-5	0.50	
		Total	**100.00**	

135.70 100

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MICROCHIP

Semiconductor Device Type: S3AE 08 (Lead) SOIC (.208x.284in) (U4)

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	61.183	83.025	611,830
Epoxy Resin	Trade Secret	Mold Compound	4.409	5.983	44,088
Phenolic Resin	Trade Secret	Mold Compound	4.409	5.983	44,088
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.764	2.393	17,635
Carbon Black	1333-86-4	Mold Compound	0.216	0.293	2,159
Copper	7440-50-8	Lead Frame	22.298	30.259	222,985
Iron	7439-89-6	Lead Frame	0.548	0.744	5,485
Silver	7440-22-4	Lead Frame	0.445	0.603	4,446
Zinc	7440-66-6	Lead Frame	0.029	0.040	292
Phosphorous	7723-14-0	Lead Frame	0.019	0.026	193
Synthetic Rubber	308079-85-8	Die Attach	0.068	0.092	680
Silica, vitreous	60676-86-0	Die Attach	0.060	0.081	595
Solid Epoxy Resin	Trade Secret	Die Attach	0.021	0.029	213
Phenol Resin	Trade Secret	Die Attach	0.021	0.029	213
Silicon	7440-21-3	Chip (Die)	3.510	4.763	35,100
Doped Gold	7440-57-5	Wire Bond	0.120	0.163	1,200
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.880	1.194	8,800
		TOTALS:	**100.000**	**135.700**	**1,000,000**

0.1357 g Total Mass

97.68	(mg) Total	Mold Compound	% ot Total Weight	71.98
	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**	

31.67	(mg) Total	Lead Frame	% of Total Weight	23.34
	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**	

0.23	(mg) Total	Die Attach	% of Total Weight	0.17
	Synthetic Rubber	308079-85-8	40.00	
	Silica, vitreous	60676-86-0	35.00	
	Solid Epoxy Resin	Trade Secret	12.50	
	Phenol Resin	Trade Secret	12.50	
		Total	**100.00**	

4.76	(mg) Total	Chip (Die)	% of Total Weight	3.51
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.16	(mg) Total	Wire Bond	% of Total Weight	0.12
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	

1.19	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.88
	Tin	7440-31-5	100.00	
		Total	**100.00**	

135.700 **100.000**

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MICROCHIP

Semiconductor Device Type: CB and NB and TT 03 (Lead) SOT-23 (C6 / CV / 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
Silica, vitreous	60676-86-0	Mold Compound	67.830	5.630	678,300
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.406	48,878
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.406	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.162	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	0.020	2,394
Copper	7440-50-8	Lead Frame	10.031	0.833	100,314
Iron	7439-89-6	Lead Frame	0.247	0.020	2,468
Silver	7440-22-4	Lead Frame	0.200	0.017	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.001	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.047	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.009	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.005	563
Modified Amine	827-43-0	Die Attach	0.026	0.002	263
Silicon	7440-21-3	Chip (Die)	7.500	0.623	75,000
Gold	7440-57-5	Wire Bond	0.200	0.017	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.104	12,500
		TOTALS:	**100.000**	**8.300**	**1,000,000**

0.0083 g Total Mass

6.62	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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	(mg) Total	Lead Frame	% of Total Weight	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**	

0.06	(mg) Total	Die Attach	% of Total Weight	0.75
	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	Total (mg)	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.02	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

0.10	(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**	

8.300				100.000

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MICROCHIP

Semiconductor Device Type: CT and OT 05 (Lead) SOT-23A (M7)

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	53.729	8.006	537,285
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.872	0.577	38,716
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.872	0.577	38,716
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.549	0.231	15,486
Carbon Black	1333-86-4	Mold Compound	0.190	0.028	1,896
Copper	7440-50-8	Lead Frame	27.037	4.029	270,371
Iron	7439-89-6	Lead Frame	0.665	0.099	6,651
Silver	7440-22-4	Lead Frame	0.539	0.080	5,391
Zinc	7440-66-6	Lead Frame	0.035	0.005	354
Phosphorous	7723-14-0	Lead Frame	0.023	0.003	233
Metal oxide	Trade Secret	Die Attach	0.845	0.126	8,448
Epoxy resins	Trade Secret	Die Attach	0.845	0.126	8,448
Glycol ethers	Trade Secret	Die Attach	0.640	0.095	6,400
Curing / Hardener	Trade Secret	Die Attach	0.230	0.034	2,304
Silicon	7440-21-3	Chip (Die)	3.170	0.472	31,700
Gold	7440-57-5	Wire Bond	0.740	0.110	7,400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.020	0.301	20,200
		TOTALS:	**100.000**	**14.900**	**1,000,000**

HANA / Material compilation **0.0149 g Total Mass**

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

9.42	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**63.21**
	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**	
4.22	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**28.3**
	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**	
0.38	**(mg) Total**	**Die Attach**	**% of Total Weight**	**2.56**
	Metal oxide	Trade Secret	33	
	Epoxy resins	Trade Secret	33	
	Glycol ethers	Trade Secret	25	
	Curing / Hardener	Trade Secret	9	
		Total	**100.00**	
0.47	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**3.17**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
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**

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MICROCHIP

Semiconductor Device Type: CT and OT 05 (Lead) SOT-23 (C7/CX)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	67.830	10.853	678,300
Epoxy Resin	Trade Secret	Mold Compound	4.888	0.782	48,878
Phenolic Resin	Trade Secret	Mold Compound	4.888	0.782	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.313	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	0.038	2,394
Copper	7440-50-8	Lead Frame	10.031	1.605	100,314
Iron	7439-89-6	Lead Frame	0.247	0.039	2,468
Silver	7440-22-4	Lead Frame	0.200	0.032	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.002	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.090	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.017	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.009	563
Modified Amine	827-43-0	Die Attach	0.026	0.004	263
Silicon	7440-21-3	Chip (Die)	7.500	1.200	75,000
Doped Gold	7440-57-5	Wire Bond	0.200	0.032	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.200	12,500
		TOTALS:	**100.000**	**16.000**	**1,000,000**

0.0160 g Total Mass

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

12.77	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.8**
	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**	
1.68	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.12	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	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**	
1.20	**(mg) Total**	**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**	
0.20	**(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**	
16.000				**100.000**

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MICROCHIP

Semiconductor Device Type: OT 05 (Lead) SOT-23 (P6)

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	41.973	7.135	419,730
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.025	0.514	30,245
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.025	0.514	30,245
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.210	0.206	12,098
Carbon Black	1333-86-4	Mold Compound	0.148	0.025	1,481
Copper	7440-50-8	Lead Frame	40.919	6.956	409,187
Iron	7439-89-6	Lead Frame	1.007	0.171	10,065
Silver	7440-22-4	Lead Frame	0.816	0.139	8,159
Zinc	7440-66-6	Lead Frame	0.054	0.009	535
Phosphorous	7723-14-0	Lead Frame	0.035	0.006	353
Aluminum oxide	1344-28-1	Die Attach	0.106	0.018	1,059
Epoxy resin	Trade Secret	Die Attach	0.193	0.033	1,925
Amine (Trade Secret - 10039)	(Trade Secret - 1	Die Attach	0.012	0.002	116
Silicon	7440-21-3	Chip (Die)	4.380	0.745	43,800
Gold	7440-57-5	Wire Bond	0.430	0.073	4,300
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.670	0.454	26,700
		TOTALS:	**100.000**	**17.000**	**1,000,000**

0.0170 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

8.39	(mg) Total	Mold Compound	% ot Total Weight	49.38
	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	(mg) Total	Lead Frame	% of Total Weight	42.83
	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	(mg) Total	Die Attach	% of Total Weight	0.31
	Aluminum oxide	1344-28-1	34	
	Epoxy resin	Trade Secret	62	
	Amine (Trade Secret - 10039)	mine (Trade Secret - 1003	4	
		Total	**100.00**	

0.74	Total (mg)	Chip (Die)	% of Total Weight	4.38
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.07	(mg) Total	Wire Bond	% of Total Weight	0.43
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

0.45	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.67
	Tin	7440-31-5	100.00	
		Total	**100.00**	

17.000 **100.000**

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MICROCHIP

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
Silica, vitreous	60676-86-0	Mold Compound	67.830	11.531	678,300
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.332	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	0.041	2,394
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468
Silver	7440-22-4	Lead Frame	0.200	0.034	2,000
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	0.338	0.057	3,375
Silicon dioxide	Trade Secret	Die Attach	0.338	0.057	3,375
Curing / Hardener	Trade Secret	Die Attach	0.075	0.013	750
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000
Gold	7440-57-5	Wire Bond	0.200	0.034	2,000
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

13.57	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.8**
	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**	
1.79	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.13	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Epoxy resin	Trade Secret	45	
	Silicon dioxide	Trade Secret	45	
	Curing / Hardener	Trade Secret	10	
		Total	**100.00**	
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**

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MICROCHIP

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
Silica, vitreous (or fused)	60676-86-0	Mold Compound	41.021	6.748	410,210
Epoxy Resin	Trade Secret	Mold Compound	4.199	0.691	41,986
Phenolic Resin	Trade Secret	Mold Compound	2.896	0.476	28,956
Carbon Black	1333-86-4	Mold Compound	0.145	0.024	1,448
Copper	7440-50-8	Lead Frame	48.319	7.949	483,192
Iron	7439-89-6	Lead Frame	1.142	0.188	11,422
Phosphorous	7723-14-0	Lead Frame	0.124	0.020	1,242
Zinc (Metal)	7440-44-0	Lead Frame	0.074	0.012	745
Aluminum oxide	1344-28-1	Die Attach	0.143	0.024	1,435
Epoxy resin	Trade Secret	Die Attach	0.261	0.043	2,609
Amine (Trade Secret - 10039)	Trade Secret	Die Attach	0.016	0.003	157
Silicon	7440-21-3	Chip (Die)	1.090	0.179	10,900
Gold	7440-57-5	Wire Bond	0.120	0.020	1,200
Nickel	7440-02-0	Plating on external leads (pins)	0.431	0.071	4,308
Palladium	7440-05-03	Plating on external leads (pins)	0.015	0.002	145
Gold	7440-57-5	Plating on external leads (pins)	0.005	0.001	47
		TOTALS:	**100.000**	**16.450**	**1,000,000**

0.0165 g Total Mass

7.94	(mg) Total	Mold Compound	% ot Total Weight	48.26
	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**	
8.17	(mg) Total	Lead Frame	% of Total Weight	49.66
	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**	
0.07	(mg) Total	Die Attach	% of Total Weight	0.42
	Aluminum oxide	1344-28-1	34	
	Epoxy resin	Trade Secret	62	
	Amine (Trade Secret - 10039)	mine (Trade Secret - 1003	4	
		Total	**100.00**	
0.18	Total (mg)	Chip (Die)	% of Total Weight	1.09
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.02	(mg) Total	Wire Bond	% of Total Weight	0.12
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
0.07	(mg) Total	Plating on external leads (pins)	% of Total Weight	0.45
	Nickel	7440-02-0	95.73	
	Palladium	7440-05-3	3.23	
	(Gold)	7440-57-5	1.04	
		Total	**100.00**	
16.450				**100.000**

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MICROCHIP

Semiconductor Device Type: CH and OT 06 (Lead) SOT-23 (C8)

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	67.830	11.531	678,300
Epoxy Resin	Trade Secret	Mold Compound	4.888	0.831	48,878
Phenolic Resin	Trade Secret	Mold Compound	4.888	0.831	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.332	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	0.041	2,394
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468
Silver	7440-22-4	Lead Frame	0.200	0.034	2,000
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	7631-86-9	Die Attach	0.169	0.029	1,688
Curing / Hardener	Trade Secret	Die Attach	0.019	0.003	188
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000
Doped Gold	7440-57-5	Wire Bond	0.200	0.034	2,000
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

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

13.57	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.8**
	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**	
1.79	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.13	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Epoxy resin	Trade Secret	75	
	Silicon dioxide	7631-86-9	23	
	Curing / Hardener	Trade Secret	3	
		Total	**100.00**	
1.28	**(mg) Total**	**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**

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MICROCHIP

Semiconductor Device Type: MB 03 (Lead) SOT-89 (A5 / AT)

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	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
		TOTALS:	**100.000**	**51.800**	**1,000,000**

0.0518 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

28.26	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**54.56**
	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**
	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**
	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**

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MICROCHIP

Semiconductor Device Type: RC 04 (Lead) SOT-143 (F7 / AB)

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	53.185	4.840	531,845
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38,324
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38,324
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.533	0.139	15,330
Carbon Black	1333-86-4	Mold Compound	0.188	0.017	1,877
Iron	7439-89-6	Lead Frame	14.095	1.283	140,947
Nickel	7440-02-0	Lead Frame	11.071	1.007	110,712
Silver	7440-22-4	Lead Frame	0.502	0.046	5,022
Cobalt	7440-48-4	Lead Frame	0.264	0.024	2,636
Manganese	7439-96-5	Lead Frame	0.211	0.019	2,109
Zinc (Metal)	7440-44-0	Lead Frame	0.132	0.012	1,318
Silicon	7440-21-3	Lead Frame	0.079	0.007	791
Phosphorous	7723-14-0	Lead Frame	0.007	0.001	66
Silver (Ag)	7440-22-4	Die Attach	0.259	0.024	2,591
Proprietary Resin	Trade Secret	Die Attach	0.061	0.006	611
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.010	0.001	99
Silicon	7440-21-3	Chip (Die)	4.290	0.390	42,900
Gold	7440-57-5	Wire Bond	0.110	0.010	1,100
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	6.340	0.577	63,400
		TOTALS:	**100.000**	**9.100**	**1,000,000**

0.0091 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

5.69	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**62.57**
	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**	
2.40	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**26.36**
	Iron	7439-89-6	53.47	
	Nickel	7440-02-0	42.00	
	Silver	7440-22-4	1.91	
	Cobalt	7440-48-4	1.00	
	Manganese	7439-96-5	0.80	
	Zinc (Metal)	7440-66-6	0.50	
	Silicon	7440-21-3	0.30	
	Phosphorous	7723-14-0	0.03	
		Total	**100.00**	
0.03	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.33**
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hardener	Trade Secret	3	
		Total	**100.00**	
0.39	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**4.29**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.01	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.11**
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
0.58	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**6.34**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
9.100				**100.000**

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MICROCHIP

Semiconductor Device Type: DB 03 (Lead) SOT-223 (F6)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	41.667	48.209	416,670
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.201	1.390	12,010
Carbon Black	1333-86-4	Mold Compound	0.147	0.170	1,471
Copper	7440-50-8	Lead Frame	44.941	51.997	449,408
Iron	7439-89-6	Lead Frame	1.105	1.279	11,054
Silver	7440-22-4	Lead Frame	0.896	1.037	8,961
Zinc	7440-66-6	Lead Frame	0.059	0.068	588
Phosphorous	7723-14-0	Lead Frame	0.039	0.045	388
Silver (Ag)	7440-22-4	Die Attach	0.502	0.581	5,024
Proprietary Resin	Trade Secret	Die Attach	0.118	0.137	1,184
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.019	0.022	192
Silicon	7440-21-3	Chip (Die)	1.580	1.828	15,800
Gold	7440-57-5	Wire Bond	0.150	0.174	1,500
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.570	1.816	15,700
		TOTALS:	**100.000**	**115.700**	**1,000,000**

0.1157 g Total Mass

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

56.72	(mg) Total	Mold Compound	% ot Total Weight	49.02
	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**	

54.43	(mg) Total	Lead Frame	% of Total Weight	47.04
	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**	

0.74	(mg) Total	Die Attach	% of Total Weight	0.64
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hardener	Trade Secret	3	
		Total	**100.00**	

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**

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MICROCHIP

Semiconductor Device Type: DC 05 (Lead) SOT-223 (N7)

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	44.855	7.401	448,545
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.232	0.533	32,322
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.232	0.533	32,322
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.293	0.213	12,929
Carbon Black	1333-86-4	Mold Compound	0.158	0.026	1,583
Copper	7440-50-8	Lead Frame	35.148	5.799	351,482
Iron	7439-89-6	Lead Frame	0.865	0.143	8,646
Silver	7440-22-4	Lead Frame	0.701	0.116	7,008
Zinc	7440-66-6	Lead Frame	0.046	0.008	460
Phosphorous	7723-14-0	Lead Frame	0.030	0.005	304
Silver (Ag)	7440-22-4	Die Attach	0.667	0.110	6,673
Proprietary Resin	Trade Secret	Die Attach	0.157	0.026	1,573
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.026	0.004	255
Silicon	7440-21-3	Chip (Die)	1.030	0.170	10,300
Gold	7440-57-5	Wire Bond	0.550	0.091	5,500
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	8.010	1.322	80,100
		TOTALS:	**100.000**	**16.500**	**1,000,000**

0.0165 g Total Mass

8.71	(mg) Total	Mold Compound	% ot Total Weight	52.77
	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**	

6.07	(mg) Total	Lead Frame	% of Total Weight	36.79
	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**	

0.14	(mg) Total	Die Attach	% of Total Weight	0.85
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hardener	Trade Secret	3	
		Total	**100.00**	

0.17	Total (mg)	Chip (Die)	% of Total Weight	1.03
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.09	(mg) Total	Wire Bond	% of Total Weight	0.55
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01
	Tin	7440-31-5	100.00	
		Total	**100.00**	

16.500 **100.000**

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MICROCHIP

Semiconductor Device Type: OS 05 (Lead) TSOT (L9)

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	53.057	6.791	530,570
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.823	0.489	38,232
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.823	0.489	38,232
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.529	0.196	15,293
Carbon Black	1333-86-4	Mold Compound	0.187	0.024	1,873
Copper	7440-50-8	Lead Frame	25.585	3.275	255,849
Iron	7439-89-6	Lead Frame	0.629	0.081	6,293
Silver	7440-22-4	Lead Frame	0.510	0.065	5,102
Zinc	7440-66-6	Lead Frame	0.033	0.004	335
Phosphorous	7723-14-0	Lead Frame	0.022	0.003	221
Silver (Ag)	7440-22-4	Die Attach	1.531	0.196	15,308
Proprietary Resin	Trade Secret	Die Attach	0.361	0.046	3,608
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.059	0.007	585
Silicon	7440-21-3	Chip (Die)	5.340	0.684	53,400
Gold	7440-57-5	Wire Bond	0.400	0.051	4,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.110	0.398	31,100
		TOTALS:	**100.000**	**12.800**	**1,000,000**

0.0128 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

7.99	(mg) Total	Mold Compound	% ot Total Weight	62.42
	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**	

3.43	(mg) Total	Lead Frame	% of Total Weight	26.78
	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**	

0.25	(mg) Total	Die Attach	% of Total Weight	1.95
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hardener	Trade Secret	3	
		Total	**100.00**	

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**

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MICROCHIP

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
Silica, vitreous	60676-86-0	Mold Compound	67.830	3.731	678,300
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.269	48,878
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.269	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.108	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	0.013	2,394
Copper	7440-50-8	Lead Frame	10.221	0.562	102,209
Iron	1309-37-1	Lead Frame	0.247	0.014	2,468
Zinc	7440-66-6	Lead Frame	0.013	0.001	131
Phosphate	7723-14-0	Lead Frame	0.009	0.000	87
Silver	7440-22-4	Lead Frame	0.008	0.000	84
Chromium	7440-47-3	Lead Frame	0.001	0.000	11
Lead	7439-92-1	Lead Frame	0.001	0.000	11
Cadmium	7440-43-9	Lead Frame	0.000	0.000	1
Silver (Ag)	7440-22-4	Die Attach	0.589	0.032	5,888
Proprietary Resin	Trade Secret	Die Attach	0.139	0.008	1,388
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.001	225
Silicon	7440-21-3	Chip (Die)	7.500	0.413	75,000
Gold	7440-57-5	Wire Bond	0.200	0.011	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.069	12,500
		TOTALS:	**100.000**	**5.500**	**1,000,000**

0.0058 g Total Mass

4.39	(mg) Total	Mold Compound	% ot Total Weight	37.38
	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**	

0.58	(mg) Total	Lead Frame	% of Total Weight	5.68
	Copper	7440-50-8	97.34	
	Iron	1309-37-1	2.35	
	Zinc	7440-66-6	0.13	
	Phosphate	7723-14-0	0.08	
	Silver	7440-22-4	0.08	
	Chromium	7440-47-3	0.01	
	Lead	7439-92-1	0.01	
	Cadmium	7440-43-9	0.00	
		Total	**100.00**	

0.04	(mg) Total	Die Attach	% of Total Weight	0.51
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
Proprietary Curing agent & Hardener		Trade Secret	3	
		Total	**100.00**	

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**

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MICROCHIP

Semiconductor Device Type: TO and ZB 03 (Lead) TO-92 (A2 / AU)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	48.255	96.992	482,545
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
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
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
		TOTALS:	**100.000**	**201.000**	**1,000,000**

0.2010 g Total Mass

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

114.11	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**56.77**
	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**	
80.00	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**39.8**
	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**	
0.18	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.09**
	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**	
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**

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MICROCHIP

Semiconductor Device Type: LT 05 (Lead) SC-70 (B4 / BZ)

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	35.003	2.205	350,030
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.522	0.159	25,223
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.522	0.159	25,223
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.009	0.064	10,089
Carbon Black	1333-86-4	Mold Compound	0.124	0.008	1,235
Copper	7440-50-8	Lead Frame	6.630	0.418	66,303
Iron	7439-89-6	Lead Frame	0.163	0.010	1,631
Silver	7440-22-4	Lead Frame	0.132	0.008	1,322
Zinc	7440-66-6	Lead Frame	0.009	0.001	87
Phosphorous	7723-14-0	Lead Frame	0.006	0.000	57
Silver (Ag)	7440-22-4	Die Attach	0.793	0.050	7,929
Proprietary Resin	Trade Secret	Die Attach	0.187	0.012	1,869
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.030	0.002	303
Silicon	7440-21-3	Chip (Die)	1.410	0.089	14,100
Gold	7440-57-5	Wire Bond	0.930	0.059	9,300
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	48.530	3.057	485,300
		TOTALS:	**100.000**	**6.300**	**1,000,000**

0.0063 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

2.59	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**41.18**
	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**	
0.44	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**6.94**
	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**	**1.01**
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hardener	Trade Secret	3	
		Total	**100.00**	
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**

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MICROCHIP

Semiconductor Device Type: LT or LTY 05 (Lead) SC-70 NiPdAu (8A)

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
Silica, vitreous	60676-86-0	Mold Compound	53.151	3.348	531,505
Epoxy Resin	Trade Secret	Mold Compound	3.830	0.241	38,300
Phenolic Resin	Trade Secret	Mold Compound	3.830	0.241	38,300
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.532	0.097	15,320
Carbon Black	1333-86-4	Mold Compound	0.188	0.012	1,876
Copper	7440-50-8	Lead Frame	24.821	1.564	248,212
Iron	7439-89-6	Lead Frame	0.587	0.037	5,867
Phosphorous	7723-14-0	Lead Frame	0.064	0.004	638
Zinc (Metal)	7440-66-0	Lead Frame	0.038	0.002	383
Aluminum oxide	1344-28-1	Die Attach	0.601	0.038	6,012
Diethylene glycol monoethyl ether acetate	112-15-2	Die Attach	0.601	0.038	6,012
Epoxy resin	Trade Secret - 10114	Die Attach	0.328	0.021	3,279
Epoxy resin	Trade Secret - 10105	Die Attach	0.164	0.010	1,640
Amine	Trade Secret - 10039	Die Attach	0.066	0.004	656
Silicon	7440-21-3	Chip (Die)	7.520	0.474	75,200
Gold	7440-57-5	Wire Bond	1.430	0.090	14,300
Nickel	7440-02-0	Plating on external leads (pins)	1.125	0.071	11,250
Palladium	5/3/7440	Plating on external leads (pins)	0.063	0.004	625
Gold	7440-57-5	Plating on external leads (pins)	0.063	0.004	625
		TOTALS:	**100.000**	**6.300**	**1,000,000**

0.0063 g Total Mass

3.94	(mg) Total	Mold Compound	% ot Total Weight	62.53
	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**	
1.61	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**25.51**
	Copper	7440-50-8	97.30	
	Iron	7439-89-6	2.30	
	Phosphorous	7723-14-0	0.25	
	Zinc (Metal)	7440-66-0	0.15	
		Total	**100.00**	
0.11	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.76**
	Aluminum oxide	1344-28-1	34	
Diethylene glycol monoethyl ether acetate		112-15-2	34	
	Epoxy resin	Trade Secret - 10114	19	
	Epoxy resin	Trade Secret - 10105	9	
	Amine	Trade Secret - 10039	4	
		Total	**100.00**	
0.47	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**7.52**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.09	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**1.43**
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
0.08	**(mg) Total**	**Plating on external leads (pins)**	**% of Total Weight**	**1.25**
	Nickel	7440-02-0	90.00	
	Palladium	7440-05-3	5.00	
	Gold	7440-57-5	5.00	
		Total	**100.00**	
6.300				**100.000**

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MICROCHIP

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
Silica, vitreous	60676-86-0	Mold Compound	36.525	2.374	365,245
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.632	0.171	26,319
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.632	0.171	26,319
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.053	0.068	10,528
Carbon Black	1333-86-4	Mold Compound	0.129	0.008	1,289
Copper	7440-50-8	Lead Frame	7.079	0.460	70,793
Iron	7439-89-6	Lead Frame	0.174	0.011	1,741
Silver	7440-22-4	Lead Frame	0.141	0.009	1,412
Zinc	7440-66-6	Lead Frame	0.009	0.001	93
Phosphorous	7723-14-0	Lead Frame	0.006	0.000	61
Aluminum oxide	1344-28-1	Die Attach	0.424	0.028	4,236
Epoxy resin	Trade Secret	Die Attach	0.770	0.050	7,702
Amine (Trade Secret - 10039)	(Trade Secret - 1	Die Attach	0.046	0.003	463
Silicon	7440-21-3	Chip (Die)	1.860	0.121	18,600
Gold	7440-57-5	Wire Bond	0.210	0.014	2,100
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	46.310	3.010	463,100
		TOTALS:	**100.000**	**6.500**	**1,000,000**

0.0065 g Total Mass

2.79	(mg) Total	Mold Compound	% ot Total Weight	42.97
	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**	

0.48	(mg) Total	Lead Frame	% of Total Weight	7.41
	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**	

0.08	(mg) Total	Die Attach	% of Total Weight	1.24
	Aluminum oxide	1344-28-1	34	
	Epoxy resin	Trade Secret	62	
	Amine	Trade Secret	4	
		Total	**100.00**	

0.12	Total (mg)	Chip (Die)	% of Total Weight	1.86
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.01	(mg) Total	Wire Bond	% of Total Weight	0.21
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

3.01	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	46.31
	Tin	7440-31-5	100.00	
		Total	**100.00**	

6.500 **100.000**

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MICROCHIP

Semiconductor Device Type: SS 20 (Lead) SSOP .209" (G3 / GF)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	69.354	113.880	693,542
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	10.050	61,207
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	6.696	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.406	2,474
Copper	7440-50-8	Lead Frame	10.031	16.472	100,314
Iron	7439-89-6	Lead Frame	0.247	0.405	2,468
Silver	7440-22-4	Lead Frame	0.200	0.328	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.022	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.014	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.924	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.172	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.092	563
Modified Amine	827-43-0	Die Attach	0.026	0.043	263
Silicon	7440-21-3	Chip (Die)	7.500	12.315	75,000
Doped Gold	7440-57-5	Wire Bond	0.200	0.328	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	2.053	12,500
		TOTALS:	**100.000**	**164.200**	**1,000,000**

0.1642 g Total Mass

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

131.03	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**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**	
17.24	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
1.23	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Silver (Ag)	7440-22-4	75.00	
	Modified Epoxy Resin	13561-08-5	14.00	
	Diglycidylether of bisphenol-F	54208-63-8	7.50	
	Modified Amine	827-43-0	3.50	
		Total	**100.00**	
12.32	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**7.5**
	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**

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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MICROCHIP

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
Silica, vitreous	60676-86-0	Mold Compound	55.395	103.316	553,945
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.992	7.445	39,917
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.992	7.445	39,917
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.597	2.978	15,967
Carbon Black	1333-86-4	Mold Compound	0.196	0.365	1,955
Copper	7440-50-8	Lead Frame	28.222	52.636	282,218
Iron	7439-89-6	Lead Frame	0.694	1.295	6,942
Silver	7440-22-4	Lead Frame	0.563	1.050	5,627
Zinc	7440-66-6	Lead Frame	0.037	0.069	369
Phosphorous	7723-14-0	Lead Frame	0.024	0.045	244
Silver	7440-22-4	Die Attach	0.622	1.159	6,216
Epoxy resin	Trade Secret	Die Attach	0.168	0.313	1,680
Metal oxide	Trade Secret	Die Attach	0.025	0.047	252
Gamma-butyrolactone	96-48-0	Die Attach	0.025	0.047	252
Silicon	7440-21-3	Chip (Die)	2.490	4.644	24,900
Gold	7440-57-5	Wire Bond	0.250	0.466	2,500
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.710	3.189	17,100
		TOTALS:	**100.000**	**186.510**	**1,000,000**

0.1865 g Total Mass

121.55	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**65.17**
	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**	
55.10	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**29.54**
	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**	
1.57	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.84**
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	
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**

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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MICROCHIP

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
Silica, vitreous	60676-86-0	Mold Compound	67.830	155.466	678,300
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	11.203	48,878
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	11.203	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	4.481	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	0.549	2,394
Copper	7440-50-8	Lead Frame	10.031	22.992	100,314
Iron	7439-89-6	Lead Frame	0.247	0.566	2,468
Silver	7440-22-4	Lead Frame	0.200	0.458	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.030	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.020	87
Silver (Ag)	7440-22-4	Die Attach	0.563	1.289	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.241	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.129	563
Modified Amine	827-43-0	Die Attach	0.026	0.060	263
Silicon	7440-21-3	Chip (Die)	7.500	17.190	75,000
Gold	7440-57-5	Wire Bond	0.200	0.458	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	2.865	12,500
		TOTALS:	**100.000**	**229.200**	**1,000,000**

0.2292 g Total Mass

182.90	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**	

24.07	(mg) Total	Lead Frame	% of Total Weight	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**	

1.72	(mg) Total	Die Attach	% of Total Weight	0.75
	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**	

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				**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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MICROCHIP

Semiconductor Device Type: WHE 32 TSOP 8x14mm (W6)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	169.372	678,300
Epoxy Resin	Trade Secret	Mold Compound	6.943	17.336	69,426
Phenolic Resin	Trade Secret	Mold Compound	4.788	11.956	47,880
Carbon Black	1333-86-4	Mold Compound	0.239	0.598	2,394
Copper	7440-50-8	Lead Frame	10.000	24.971	100,003
Nickel	7440-02-0	Lead Frame	0.267	0.666	2,667
Silicon	7440-21-3	Lead Frame	0.047	0.118	473
Magnesium	7439-95-4	Lead Frame	0.011	0.026	105
Silver	7440-22-4	Lead Frame	0.175	0.438	1,752
Silver	7440-22-4	Die Attach	0.600	1.498	6,000
Epoxy Resin	Trade Secret	Die Attach	0.128	0.318	1,275
Copper	7440-50-8	Die Attach	0.023	0.056	225
Silicon	7440-21-3	Chip (Die)	7.500	18.728	75,000
Doped Gold	7440-57-5	Wire Bond	0.200	0.499	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.121	12,500
		TOTALS:	**100.000**	**249.700**	**1,000,000**

0.2497 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

199.26	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**	

26.22	(mg) Total	Lead Frame	% of Total Weight	10.5
	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**	

1.87	(mg) Total	Die Attach	% of Total Weight	0.75
	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade Secret	17.00	
	Copper	7440-50-8	3.00	
		Total	**100.00**	

18.73	(mg) Total	Chip (Die)	% of Total Weight	7.5
	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**

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MICROCHIP

Semiconductor Device Type: EIE 40 TSOP 10x20mm (W8)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.120	263.095	571,200
Epoxy Resin	Trade Secret	Mold Compound	5.846	26.929	58,464
Phenolic Resin	Trade Secret	Mold Compound	4.032	18.571	40,320
Carbon Black	1333-86-4	Mold Compound	0.202	0.929	2,016
Copper	7440-50-8	Lead Frame	26.248	120.900	262,484
Nickel	7440-02-0	Lead Frame	0.700	3.224	7,000
Silicon	7440-21-3	Lead Frame	0.124	0.571	1,240
Magnesium	7439-95-4	Lead Frame	0.028	0.127	276
Silver	7440-22-4	Lead Frame	0.460	2.119	4,600
Silver	7440-22-4	Die Attach	0.360	1.658	3,600
Epoxy Resin	Trade Secret	Die Attach	0.077	0.352	765
Copper	7440-50-8	Die Attach	0.014	0.062	135
Silicon	7440-21-3	Chip (Die)	1.900	8.751	19,000
Doped Gold	7440-57-5	Wire Bond	0.280	1.290	2,800
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.610	12.022	26,100
		TOTALS:	**100.000**	**460.600**	**1,000,000**

0.4606 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

309.52	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**67.2**
	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**	
126.94	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**27.56**
	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**	
2.07	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.45**
	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade Secret	17.00	
	Copper	7440-50-8	3.00	
		Total	**100.00**	
8.75	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**1.9**
	Silicon	7440-21-3	100	
		Total	**100.00**	
1.29	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.28**
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	
12.02	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**2.61**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
460.600				**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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MICROCHIP

Semiconductor Device Type: EKE 48 TSOP 12x20mm (W9)

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	56.814	320.715	568,140
Epoxy Resin	Trade Secret	Mold Compound	5.815	32.826	58,151
Phenolic Resin	Trade Secret	Mold Compound	4.010	22.639	40,104
Carbon Black	1333-86-4	Mold Compound	0.201	1.132	2,005
Copper	7440-50-8	Lead Frame	26.982	152.312	269,818
Nickel	7440-02-0	Lead Frame	0.720	4.062	7,196
Silicon	7440-21-3	Lead Frame	0.127	0.720	1,275
Magnesium	7439-95-4	Lead Frame	0.028	0.160	283
Silver	7440-22-4	Lead Frame	0.473	2.669	4,728
Silver	7440-22-4	Die Attach	0.304	1.716	3,040
Epoxy Resin	Trade Secret	Die Attach	0.065	0.365	646
Copper	7440-50-8	Die Attach	0.011	0.064	114
Silicon	7440-21-3	Chip (Die)	1.380	7.790	13,800
Doped Gold	7440-57-5	Wire Bond	0.320	1.806	3,200
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.750	15.524	27,500
		TOTALS:	**100.000**	**564.500**	**1,000,000**

0.5645 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

377.31	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**66.84**
	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**	
159.92	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**28.33**
	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**
	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**
	Silicon	7440-21-3	100	
		Total	**100.00**	
1.81	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.32**
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	
15.52	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**2.75**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
564.500				**100.000**

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MICROCHIP

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
Fused Silica	60676-86-0	Mold Compound	24.974	472.066	249,744
Epoxy Resin 1	Trade Secret	Mold Compound	0.922	17.434	9,224
Epoxy Resin 2	Trade Secret	Mold Compound	0.851	16.093	8,514
Phenol Resin	Trade Secret	Mold Compound	1.277	24.140	12,771
Carbon Black	1333-86-4	Mold Compound	0.071	1.341	710
Misc.	Trade Secret	Mold Compound	0.284	5.364	2,838
Copper	7440-50-8	Lead Frame	68.874	1301.860	688,742
Tin	7440-31-5	Lead Frame	0.116	2.193	1,160
Silver	7440-22-4	Lead Frame	1.340	25.325	13,398
Silver (Ag)	7440-22-4	Die Attach	0.063	1.187	628
Proprietary Resin	Trade Secret	Die Attach	0.015	0.280	148
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.002	0.045	24
Silicon	7440-21-3	Chip (Die)	0.600	11.341	6,000
Gold	7440-57-5	Wire Bond	0.050	0.945	500
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.560	10.585	5,600
		TOTALS:	**100.000**	**1,890.200**	**1,000,000**

1.8902 g Total Mass

536.44	(mg) Total	Mold Compound	% ot Total Weight	28.38
	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**	

1329.38	(mg) Total	Lead Frame	% of Total Weight	70.33
	Copper	7440-50-8	97.93	
	Tin	7440-31-5	0.17	
	Silver	7440-22-4	1.91	
		Total	**100.00**	

1.51	(mg) Total	Die Attach	% of Total Weight	0.08
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hardener	Trade Secret	3	
		Total	**100.00**	

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 **100.000**

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MICROCHIP

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
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
Misc.	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
		TOTALS:	**100.000**	**1,983.900**	**1,000,000**

1.9839 g Total Mass

526.92	(mg) Total	Mold Compound	% ot Total Weight	26.56
	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
	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
	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
	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**

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MICROCHIP

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
Epoxy Resin	Trade Secret	Mold Compound	6.943	23.487	69,426
Phenolic Resin	Trade Secret	Mold Compound	4.788	16.198	47,880
Carbon Black	1333-86-4	Mold Compound	0.239	0.810	2,394
Copper	7440-50-8	Lead Frame	10.229	34.603	102,286
Tin	7440-31-5	Lead Frame	0.026	0.089	263
Silver	7440-22-4	Lead Frame	0.200	0.677	2,000
Zinc	7440-66-6	Lead Frame	0.019	0.064	189
Chromium	7440-47-3	Lead Frame	0.026	0.089	263
Silver (Ag)	7440-22-4	Die Attach	0.623	2.106	6,225
ANHYDRIDE	Trade Secret	Die Attach	0.068	0.228	675
EPOXY RESIN	Trade Secret	Die Attach	0.060	0.203	600
Silicon	7440-21-3	Chip (Die)	7.500	25.373	75,000
Gold	7440-57-5	Wire Bond	0.200	0.677	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.229	12,500
		TOTALS:	**100.000**	**338.300**	**1,000,000**

0.3383 g Total Mass

269.96	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.8**
	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**
	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**
	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**

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MICROCHIP

Semiconductor Device Type: PT 44 (Lead) TQFP 10x10x1mm (T4/TY)

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	189.545	693,542
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	16.728	61,207
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	11.145	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.676	2,474
Copper	7440-50-8	Lead Frame	10.000	27.331	100,003
Nickel	7440-02-0	Lead Frame	0.267	0.729	2,667
Silver	7440-22-4	Lead Frame	0.175	0.479	1,752
Silicon	7440-21-3	Lead Frame	0.047	0.129	473
Magnesium	7439-95-4	Lead Frame	0.011	0.029	105
Silver (Ag)	7440-22-4	Die Attach	0.600	1.640	6,000
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.410	1,500
Silicon	7440-21-3	Chip (Die)	7.500	20.498	75,000
Gold	7440-57-5	Wire Bond	0.200	0.547	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.416	12,500
		TOTALS:	**100.000**	**273.300**	**1,000,000**

0.2733 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

218.09	(mg) Total	Mold Compound	% ot Total Weight	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**	

28.70	(mg) Total	Lead Frame	% of Total Weight	10.5
	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**	

2.05	(mg) Total	Die Attach	% of Total Weight	0.75
	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligomer	General	20	
		Total	**100.00**	

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**

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MICROCHIP

Semiconductor Device Type: 48 TQFP 7x7x1.4 JE

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica Fused	60676-86-0	Mold Compound	50.552	89.124	505,522
Epoxy Resin	Trade Secret	Mold Compound	3.574	6.300	35,736
Phenol Resin	Trade Secret	Mold Compound	2.972	5.240	29,723
Carbon Black	1333-86-4	Mold Compound	0.172	0.303	1,718
Copper	7440-50-8	Lead Frame	33.515	59.087	335,153
Nickel	7440-02-0	Lead Frame	0.894	1.576	8,938
Silver	7440-22-4	Lead Frame	0.587	1.035	5,873
Silicon	7440-21-3	Lead Frame	0.158	0.279	1,584
Magnesium	7439-95-4	Lead Frame	0.035	0.062	352
Silver	7440-22-4	Die Attach	0.930	1.640	9,300
Epoxy Resin	Trade secret	Die Attach	0.310	0.547	3,100
Silicon	7440-21-3	Chip (Die)	3.570	6.294	35,700
Gold	7440-57-5	Wire Bond	0.230	0.405	2,300
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.500	4.408	25,000
		TOTALS:	**100.000**	**176.300**	**1,000,000**

0.1763 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

100.97	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**57.27**
	Silica Fused	60676-86-0	88.27	
	Epoxy Resin	Trade Secret	6.24	
	Phenol Resin	Trade Secret	5.19	
	Carbon Black	1333-86-4	0.30	
		Total	**100.00**	
62.04	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**35.19**
	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**	
2.19	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.24**
	Silver	7440-22-4	75.00	
	Epoxy Resin	Trade secret	25.00	
		Total	**100.00**	
6.29	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**3.57**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.41	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.23**
	Gold	7440-57-5	100.00	
		Total	**100.00**	
4.41	**(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**	
176.300				**100.000**

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MICROCHIP

Semiconductor Device Type: PT 64 (Lead) TQFP 10x10x1mm (V2/VG)

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
		TOTALS:	**100.000**	**286.700**	**1,000,000**

0.2867 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

228.79	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**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**	
30.10	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.5**
	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**
	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**

MICROCHIP

Semiconductor Device Type: PT 64 (Lead) TQFP 14x14x1mm (V3 / VH)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	45.543	245.932	455,430
Epoxy Resin	Trade Secret	Mold Compound	4.661	25.172	46,615
Phenolic Resin	Trade Secret	Mold Compound	3.215	17.360	32,148
Carbon Black	1333-86-4	Mold Compound	0.161	0.868	1,607
Copper	7440-50-8	Lead Frame	32.381	174.856	323,807
Tin	7440-31-5	Lead Frame	0.083	0.449	831
Silver	7440-22-4	Lead Frame	0.633	3.419	6,332
Zinc	7440-66-6	Lead Frame	0.060	0.323	598
Chromium	7440-47-3	Lead Frame	0.083	0.449	831
Silver (Ag)	7440-22-4	Die Attach	1.129	6.096	11,288
ANHYDRIDE	Trade Secret	Die Attach	0.122	0.661	1,224
EPOXY RESIN	Trade Secret	Die Attach	0.109	0.588	1,088
Silicon	7440-21-3	Chip (Die)	10.540	56.916	105,400
Gold	7440-57-5	Wire Bond	0.340	1.836	3,400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.940	5.076	9,400
		TOTALS:	**100.000**	**540.000**	**1,000,000**

0.5400 g Total Mass

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**	**% ot Total Weight**	**53.58**
	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**
	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**
	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				**100.000**

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Semiconductor Device Type: PT 80 (Lead) TQFP 12x12x1mm (X2/XD)

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	254.322	693,542
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	22.444	61,207
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	14.953	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.907	2,474
Copper	7440-50-8	Lead Frame	10.000	36.671	100,003
Nickel	7440-02-0	Lead Frame	0.267	0.978	2,667
Silver	7440-22-4	Lead Frame	0.175	0.643	1,752
Silicon	7440-21-3	Lead Frame	0.047	0.173	473
Magnesium	7439-95-4	Lead Frame	0.011	0.039	105
Silver (Ag)	7440-22-4	Die Attach	0.600	2.200	6,000
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.550	1,500
Silicon	7440-21-3	Chip (Die)	7.500	27.503	75,000
Gold	7440-57-5	Wire Bond	0.200	0.733	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.584	12,500
		TOTALS:	**100.000**	**366.700**	**1,000,000**

0.3667 g Total Mass

292.63	(mg) Total	Mold Compound	% ot Total Weight	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**	
38.50	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.5**
	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**	
2.75	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligomer	General	20	
		Total	**100.00**	
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**

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MICROCHIP

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
Silica, vitreous (or fused)	60676-86-0	Mold Compound	48.892	260.105	488,920
Epoxy Resin	Trade Secret	Mold Compound	5.004	26.623	50,042
Phenolic Resin	Trade Secret	Mold Compound	3.451	18.360	34,512
Carbon Black	1333-86-4	Mold Compound	0.173	0.918	1,726
Copper	7440-50-8	Lead Frame	31.426	167.187	314,261
Tin	7440-31-5	Lead Frame	0.081	0.429	807
Silver	7440-22-4	Lead Frame	0.615	3.269	6,146
Zinc	7440-66-6	Lead Frame	0.058	0.309	581
Chromium	7440-47-3	Lead Frame	0.081	0.429	807
Silver (Ag)	7440-22-4	Die Attach	0.830	4.416	8,300
ANHYDRIDE	Trade Secret	Die Attach	0.090	0.479	900
EPOXY RESIN	Trade Secret	Die Attach	0.080	0.426	800
Silicon	7440-21-3	Chip (Die)	7.650	40.698	76,500
Gold	7440-57-5	Wire Bond	0.370	1.968	3,700
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.200	6.384	12,000
		TOTALS:	**100.000**	**532.000**	**1,000,000**

0.5320 g Total Mass

306.01	(mg) Total	Mold Compound	% ot Total Weight	57.52
	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**	

171.62	(mg) Total	Lead Frame	% of Total Weight	32.26
	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**	

5.32	(mg) Total	Die Attach	% of Total Weight	1
	Silver (Ag)	7440-22-4	83	
	ANHYDRIDE	Trade Secret	9	
	EPOXY RESIN	Trade Secret	8	
		Total	**100.00**	

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**

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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MICROCHIP

Semiconductor Device Type: PF 100 (Lead) TQFP 12x12x1mm (V7)

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	271.175	693,542
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	23.932	61,207
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	15.944	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.967	2,474
Copper	7440-50-8	Lead Frame	10.000	39.101	100,003
Nickel	7440-02-0	Lead Frame	0.267	1.043	2,667
Silver	7440-22-4	Lead Frame	0.175	0.685	1,752
Silicon	7440-21-3	Lead Frame	0.047	0.185	473
Magnesium	7439-95-4	Lead Frame	0.011	0.041	105
Silver (Ag)	7440-22-4	Die Attach	0.600	2.346	6,000
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.587	1,500
Silicon	7440-21-3	Chip (Die)	7.500	29.325	75,000
Gold	7440-57-5	Wire Bond	0.200	0.782	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.888	12,500
		TOTALS:	**100.000**	**391.000**	**1,000,000**

0.3910 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

312.02	(mg) Total	Mold Compound	% ot Total Weight	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**	

41.06	(mg) Total	Lead Frame	% of Total Weight	10.5
	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**	

2.93	(mg) Total	Die Attach	% of Total Weight	0.75
	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligomer	General	20	
		Total	**100.00**	

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**

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MICROCHIP

Semiconductor Device Type: PF 100 (Lead) TQFP 14x14mm (E5 / EQ)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	58.089	288.702	580,890
Epoxy Resin	Trade Secret	Mold Compound	5.946	29.550	59,456
Phenolic Resin	Trade Secret	Mold Compound	4.100	20.379	41,004
Carbon Black	1333-86-4	Mold Compound	0.205	1.019	2,050
Copper	7440-50-8	Lead Frame	26.156	129.995	261,559
Tin	7440-31-5	Lead Frame	0.067	0.334	671
Silver	7440-22-4	Lead Frame	0.511	2.542	5,115
Zinc	7440-66-6	Lead Frame	0.048	0.240	483
Chromium	7440-47-3	Lead Frame	0.067	0.334	671
Silver (Ag)	7440-22-4	Die Attach	0.481	2.393	4,814
ANHYDRIDE	Trade Secret	Die Attach	0.052	0.259	522
EPOXY RESIN	Trade Secret	Die Attach	0.046	0.231	464
Silicon	7440-21-3	Chip (Die)	2.710	13.469	27,100
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
		TOTALS:	**100.000**	**497.000**	**1,000,000**

0.4970 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

339.65	(mg) Total	Mold Compound	% ot Total Weight	68.34
	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**	

133.44	(mg) Total	Lead Frame	% of Total Weight	26.85
	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**	

2.88	(mg) Total	Die Attach	% of Total Weight	0.58
	Silver (Ag)	7440-22-4	83	
	ANHYDRIDE	Trade Secret	9	
	EPOXY RESIN	Trade Secret	8	
		Total	**100.00**	

13.47	Total (mg)	Chip (Die)	% of Total Weight	2.71
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

2.09	(mg) Total	Wire Bond	% of Total Weight	0.42
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

5.47	(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**	

497.000 **100.000**

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MICROCHIP

Semiconductor Device Type: MS 100 QFP 14x20x2.7 TS

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica Fused	60676-86-0	Mold Compound	61.401	1037.302	614,006
Epoxy Resin	Trade Secret	Mold Compound	4.341	73.329	43,405
Phenol Resin	Trade Secret	Mold Compound	3.610	60.990	36,102
Carbon Black	1333-86-4	Mold Compound	0.209	3.525	2,087
Copper	7440-50-8	Lead Frame	24.153	408.043	241,531
Nickel	7440-02-0	Lead Frame	0.644	10.882	6,441
Silver	7440-22-4	Lead Frame	0.423	7.151	4,233
Silicon	7440-21-3	Lead Frame	0.114	1.928	1,141
Magnesium	7439-95-4	Lead Frame	0.025	0.428	254
Silver	7440-22-4	Die Attach	0.038	0.634	375
Epoxy Resin	Trade secret	Die Attach	0.005	0.084	50
Diluent	Trade secret	Die Attach	0.005	0.084	50
Hardener	Trade secret	Die Attach	0.003	0.042	25
Silicon	7440-21-3	Chip (Die)	3.390	57.271	33,900
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.069	1.162	688
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.001	0.021	12
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.570	26.524	15,700
		TOTALS:	**100.000**	**1,689.400**	**1,000,000**

1.6894 g Total Mass

Package Homogeneous Materials

1175.15	(mg) Total	Mold Compound	% ot Total Weight	69.56
	Silica Fused	60676-86-0	88.27	
	Epoxy Resin	Trade Secret	6.24	
	Phenol Resin	Trade Secret	5.19	
	Carbon Black	1333-86-4	0.30	
		Total	**100.00**	
428.43	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**25.36**
	Copper	7440-50-8	95.241	
	Nickel	7440-02-0	2.54	
	Silver	7440-22-4	1.669	
	Silicon	7440-21-3	0.45	
	Magnesium	7439-95-4	0.1	
		Total	**100.00**	
0.84	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.05**
	Silver	7440-22-4	75	
	Epoxy Resin	Trade secret	10.00	
	Diluent	Trade secret	10.00	
	Hardener	Trade secret	5.00	
		Total	**100.00**	
57.27	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**3.39**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
1.18	**(mg) Total**	**Wire Bond palladium coated copper (CuPd)**	**% of Total Weight**	**0.07**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		Total	**100.00**	
26.52	**(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**	
1,689.4				**100.000**

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MICROCHIP

Semiconductor Device Type: NU TQFP 128 14x14x1mm (Z2)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	56.797	316.643	567,970
Epoxy Resin	Trade Secret	Mold Compound	5.813	32.409	58,133
Phenolic Resin	Trade Secret	Mold Compound	4.009	22.351	40,092
Carbon Black	1333-86-4	Mold Compound	0.200	1.118	2,005
Copper	7440-50-8	Lead Frame	25.658	143.043	256,579
Nickel	7440-02-0	Lead Frame	0.684	3.815	6,843
Silver	7440-22-4	Lead Frame	0.450	2.507	4,496
Silicon	7440-21-3	Lead Frame	0.121	0.676	1,212
Magnesium	7439-95-4	Lead Frame	0.027	0.150	269
Silver	7440-22-4	Die Attach	0.052	0.288	517
Epoxy Resin	9003-36-5	Die Attach	0.013	0.073	132
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.004	0.025	44
Phenolic hardener	92-88-6	Die Attach	0.000	0.001	2
Butyl cellosolve acetate	112-07-2	Die Attach	0.001	0.003	6
Silicon	7440-21-3	Chip (Die)	4.760	26.537	47,600
Gold	7440-57-5	Wire Bond	0.250	1.394	2,500
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.160	6.467	11,600
		TOTALS:	**100.000**	**557.500**	**1,000,000**

0.5575 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

372.52	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**66.82**
	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**	
150.19	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**26.94**
	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**	
0.39	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.07**
	Silver	7440-22-4	73.80	
	Epoxy Resin	9003-36-5	18.80	
	t-Butyl phenyl glycidyl ether	3101-60-8	6.30	
	Phenolic hardener	92-88-6	0.30	
	Butyl cellosolve acetate	112-07-2	1	
		Total	**100.00**	
26.54	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**4.76**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
1.39	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.25**
	Gold	7440-57-5	100.00	
		Total	**100.00**	
6.47	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.16**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
557.500				**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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MICROCHIP

Semiconductor Device Type: PH 144 (Lead) TQFP 16x16x1mm (R9)

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	57.996	397.559	579,955
Epoxy Resin	Trade Secret	Mold Compound	5.936	40.691	59,360
Phenolic Resin	Trade Secret	Mold Compound	4.094	28.063	40,938
Carbon Black	1333-86-4	Mold Compound	0.205	1.403	2,047
Copper	7440-50-8	Lead Frame	26.955	184.775	269,547
Tin	7440-31-5	Lead Frame	0.069	0.474	692
Silver	7440-22-4	Lead Frame	0.527	3.613	5,271
Zinc	7440-66-6	Lead Frame	0.050	0.341	498
Chromium	7440-47-3	Lead Frame	0.069	0.474	692
Silver (Ag)	7440-22-4	Die Attach	0.423	2.902	4,233
ANHYDRIDE	Trade Secret	Die Attach	0.046	0.315	459
EPOXY RESIN	Trade Secret	Die Attach	0.041	0.280	408
Silicon	7440-21-3	Chip (Die)	2.090	14.327	20,900
Doped Gold	7440-57-5	Wire Bond	0.280	1.919	2,800
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.220	8.363	12,200
		TOTALS:	**100.000**	**685.500**	**1,000,000**

0.6855 g Total Mass

467.72	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**68.23**
	Silica, vitreous (or fused)	60676-86-0	85.0000	
	Epoxy Resin	Trade Secret	8.7000	
	Phenolic Resin	Trade Secret	6.0000	
	Carbon Black	1333-86-4	0.3000	
		Total	**100.00**	
189.68	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**27.67**
	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**	
3.50	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.51**
	Silver (Ag)	7440-22-4	83.00	
	ANHYDRIDE	Trade Secret	9.00	
	EPOXY RESIN	Trade Secret	8.00	
		Total	**100.00**	
14.33	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**2.09**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
1.92	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.28**
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	
8.36	**(mg) Total**	**Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.22**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
685.500				**100.000**

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MICROCHIP

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

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	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

19.49	(mg) Total	Mold Compound	% ot Total Weight	59.06
	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	% of Total Weight	31.52
	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	% of Total Weight	1.12
	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)	% of Total Weight	6.3
	Doped Silcon	7440-21-3	100	
		Total	**100.00**	

0.06	(mg) Total	Wire Bond	% of Total Weight	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	% of Total Weight	1.82
	Tin	7440-31-5	100.00	
		Total	**100.00**	

33.000 mg **100.000**

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MICROCHIP

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
Silica, vitreous (or fused)	60676-86-0	Mold Compound	39.814	23.888	398,140
Epoxy Resin	Trade Secret	Mold Compound	4.075	2.445	40,751
Phenolic Resin	Trade Secret	Mold Compound	2.810	1.686	28,104
Carbon Black	1333-86-4	Mold Compound	0.141	0.084	1,405
Copper	7440-50-8	Lead Frame	43.249	25.949	432,489
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
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
Silicon	7440-21-3	Chip (Die)	3.340	2.004	33,400
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
		TOTALS:	**100.000**	**60.000**	**1,000,000**

0.0600 g Total Mass

28.10	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**46.84**
	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**	
27.25	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**45.41**
	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**	
0.98	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.64**
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	
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**

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MICROCHIP

Semiconductor Device Type: ST 16 (Lead) TSSOP 4.4mm (D8)

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	29.427	19.128	294,270
Epoxy Resin	Trade Secret	Mold Compound	3.012	1.958	30,119
Phenolic Resin	Trade Secret	Mold Compound	2.077	1.350	20,772
Carbon Black	1333-86-4	Mold Compound	0.104	0.068	1,039
Copper	7440-50-8	Lead Frame	44.468	28.904	444,680
Nickel	7440-02-0	Lead Frame	1.186	0.771	11,859
Silver	7440-22-4	Lead Frame	0.779	0.507	7,793
Silicon	7440-21-3	Lead Frame	0.210	0.137	2,101
Magnesium	7439-95-4	Lead Frame	0.047	0.030	467
Silver	7440-22-4	Die Attach	2.472	1.607	24,716
Epoxy resin	Trade Secret	Die Attach	0.668	0.434	6,680
Metal oxide	Trade Secret	Die Attach	0.100	0.065	1,002
Gamma-butyrolactone	96-48-0	Die Attach	0.100	0.065	1,002
Silicon	7440-21-3	Chip (Die)	12.340	8.021	123,400
Gold	7440-57-5	Wire Bond	0.610	0.397	6,100
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.400	1.560	24,000
		TOTALS:	**100.000**	**65.000**	**1,000,000**

0.0650 g Total Mass

22.50	(mg) Total	Mold Compound	% ot Total Weight	34.62
	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**	

30.35	(mg) Total	Lead Frame	% of Total Weight	46.69
	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**	

2.17	(mg) Total	Die Attach	% of Total Weight	3.34
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
		Total	**100.00**	

8.02	Total (mg)	Chip (Die)	% of Total Weight	12.34
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.40	(mg) Total	Wire Bond	% of Total Weight	0.61
	Doped Gold	7440-57-5	100	
		Total	**100.00**	

1.56	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.4
	Tin	7440-31-5	100.00	
		Total	**100.00**	

65.000 **100.000**

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MICROCHIP

Semiconductor Device Type: ST 20 (Lead) TSSOP 4.4mm (G2 / GE)

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	40.562	31.638	405,620
Epoxy Resin	Trade Secret	Mold Compound	4.152	3.238	41,516
Phenolic Resin	Trade Secret	Mold Compound	2.863	2.233	28,632
Carbon Black	1333-86-4	Mold Compound	0.143	0.112	1,432
Copper	7440-50-8	Lead Frame	40.725	31.766	407,251
Nickel	7440-02-0	Lead Frame	1.086	0.847	10,861
Silver	7440-22-4	Lead Frame	0.714	0.557	7,137
Silicon	7440-21-3	Lead Frame	0.192	0.150	1,924
Magnesium	7439-95-4	Lead Frame	0.043	0.033	428
Silver	7440-22-4	Die Attach	1.317	1.027	13,172
Epoxy resin	Trade Secret	Die Attach	0.356	0.278	3,560
Metal oxide	Trade Secret	Die Attach	0.053	0.042	534
Gamma-butyrolactone	96-48-0	Die Attach	0.053	0.042	534
Silicon	7440-21-3	Chip (Die)	4.690	3.658	46,900
Gold	7440-57-5	Wire Bond	0.540	0.421	5,400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.510	1.958	25,100
		TOTALS:	**100.000**	**78.000**	**1,000,000**

0.0780 g Total Mass

37.22	(mg) Total	Mold Compound	% ot Total Weight	47.72
	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**	
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**	
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**

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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MICROCHIP

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
Silica, fused	60676-86-0	Mold Compound	67.662	8.458	676,620
Epoxy Resin	Trade Secret	Mold Compound	3.646	0.456	36,462
Phenolic Resin	Trade Secret	Mold Compound	3.646	0.456	36,462
Carbon Black	1333-86-4	Mold Compound	0.226	0.028	2,255
Copper	7440-50-8	Lead Frame	20.505	2.563	205,054
Nickel	7440-02-0	Lead Frame	0.547	0.068	5,469
Silicon	7440-21-3	Lead Frame	0.097	0.012	969
Magnesium	7439-95-4	Lead Frame	0.022	0.003	215
Silver	7440-22-4	Lead Frame	0.359	0.045	3,593
Silver	7440-22-4	Die Attach	0.800	0.100	8,000
Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2,000
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900
Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.890	0.111	8,900
		TOTALS:	**100.000**	**12.500**	**1,000,000**

0.0125 g Total Mass

9.40	(mg) Total	Mold Compound	% ot Total Weight	75.18
	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**	

2.69	(mg) Total	Lead Frame	% of Total Weight	21.53
	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**	

0.13	(mg) Total	Die Attach	% of Total Weight	1.00
	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade secret	20.00	
		Total	**100.00**	

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**

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MICROCHIP

Semiconductor Device Type: QUAE 08 (Lead) USON 2x2x0.55mm (UA)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	67.662	8.458	676,620
Epoxy Resin	Trade Secret	Mold Compound	3.646	0.456	36,462
Phenolic Resin	Trade Secret	Mold Compound	3.646	0.456	36,462
Carbon Black	1333-86-4	Mold Compound	0.226	0.028	2,255
Copper	7440-50-8	Lead Frame	20.505	2.563	205,054
Nickel	7440-02-0	Lead Frame	0.547	0.068	5,469
Silicon	7440-21-3	Lead Frame	0.097	0.012	969
Magnesium	7439-95-4	Lead Frame	0.022	0.003	215
Silver	7440-22-4	Lead Frame	0.359	0.045	3,593
Silver	7440-22-4	Die Attach	0.800	0.100	8,000
Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2,000
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900
Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.890	0.111	8,900
		TOTALS:	**100.000**	**12.500**	**1,000,000**

0.0125 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

9.40	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**75.18**
	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**	
2.69	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**21.53**
	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**	
0.13	**(mg) Total**	**Die Attach**	**% of Total Weight**	**1.00**
	Silver	7440-22-4	80.00	
	Epoxy Resin	Trade secret	20.00	
		Total	**100.00**	
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**

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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MICROCHIP

Semiconductor Device Type: QX6E 06 (Lead) XSON 1.5x1.5x0.45mm (QX)

Termination Base Alloy: Copper Alloy (Cu)

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
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
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
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
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

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

4.18	(mg) Total	Mold Compound	% ot Total Weight	68.55
	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
	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
	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**

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MICROCHIP

Semiconductor Device Type: QX8E 08 (Lead) XSON 2x2x0.45mm (Q7)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	71.820	7.326	718,200
Epoxy Resin	Trade Secret	Mold Compound	3.870	0.395	38,703
Phenolic Resin	Trade Secret	Mold Compound	3.870	0.395	38,703
Carbon Black	1333-86-4	Mold Compound	0.239	0.024	2,394
Copper	7440-50-8	Lead Frame	10.000	1.020	100,003
Nickel	7440-02-0	Lead Frame	0.267	0.027	2,667
Silicon	7440-21-3	Lead Frame	0.047	0.005	473
Magnesium	7439-95-4	Lead Frame	0.011	0.001	105
Silver	7440-22-4	Lead Frame	0.175	0.018	1,752
Ag	7440-22-4	Die Attach	0.563	0.057	5,625
Epoxy resin	Trade secret	Die Attach	0.113	0.011	1,125
Aliphatic anhydride	Trade secret	Die Attach	0.038	0.004	375
2-Butoxyethyl acetate	112-07-2	Die Attach	0.019	0.002	188
Polymeric material	Trade secret	Die Attach	0.019	0.002	188
GaAs	1303-00-0	Chip (Die)	7.500	0.765	75,000
Gold	7440-57-5	Wire Bond	0.200	0.020	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.128	12,500
		TOTALS:	**100.000**	**10.200**	**1,000,000**

0.0102 g Total Mass

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

8.14	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.8**
	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**	
1.07	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.5**
	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**	**0.75**
	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**	
0.77	**(mg) Total**	**Chip (Die)**	**% of Total Weight**	**7.5**
Doped GaAs	GaAs	1303-00-0	100	
		Total	**100.00**	
0.02	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.2**
	Gold	7440-57-5	100.00	
		Total	**100.00**	
0.13	**(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**	
10.200				**100.000**

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MICROCHIP

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
Epoxy Resin	Trade Secret	Mold Compound	2.522	0.139	25,215
Phenolic Resin	Trade Secret	Mold Compound	2.522	0.139	25,215
Carbon Black	1333-86-4	Mold Compound	0.156	0.009	1,560
Copper	7440-50-8	Lead Frame	38.649	2.126	386,488
Nickel	7440-02-0	Lead Frame	1.031	0.057	10,307
Silicon	7440-21-3	Lead Frame	0.183	0.010	1,826
Magnesium	7439-95-4	Lead Frame	0.041	0.002	406
Silver	7440-22-4	Lead Frame	0.677	0.037	6,773
Silver	7440-22-4	Die Attach	1.888	0.104	18,880
Epoxy Resin	Trade secret	Die Attach	0.472	0.026	4,720
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.360	0.130	23,600
Doped Gold	7440-57-5	Wire Bond	0.720	0.040	7,200
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.990	0.109	19,900
		TOTALS:	**100.000**	**5.500**	**1,000,000**

0.0055 g Total Mass

2.86	(mg) Total	Mold Compound	% ot Total Weight	51.99
	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**	

2.23	(mg) Total	Lead Frame	% of Total Weight	40.58
	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**	

0.13	(mg) Total	Die Attach	% of Total Weight	2.36
	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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MICROCHIP

Semiconductor Device Type: TL 36 (Lead) VTLA 5x5x0.9mm (7S)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	100.049	678,300
Epoxy Resin	Trade Secret	Mold Compound	6.943	10.240	69,426
Phenolic Resin	Trade Secret	Mold Compound	4.788	7.062	47,880
Carbon Black	1333-86-4	Mold Compound	0.239	0.353	2,394
Copper	7440-50-8	Lead Frame	10.217	15.069	102,165
Iron	7439-89-6	Lead Frame	0.242	0.356	2,415
Phosphorous	7723-14-0	Lead Frame	0.026	0.039	263
Zinc (Metal)	7440-44-0	Lead Frame	0.016	0.023	158
Silver (Ag)	7440-22-4	Die Attach	0.589	0.868	5,888
Proprietary Resin	Trade Secret	Die Attach	0.139	0.205	1,388
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.033	225
Silicon	7440-21-3	Chip (Die)	7.500	11.063	75,000
Gold	7440-57-5	Wire Bond	0.200	0.295	2,000
Nickel	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125	1.659	11,250
Palladium	7440-05-03	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.092	625
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.092	625
		TOTALS:	**100.000**	**147.500**	**1,000,000**

0.1475 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e4

117.71	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.8**
	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**	
15.49	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.5**
	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**	
1.11	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hardener	Trade Secret	3	
		Total	**100.00**	
11.06	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**7.5**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.30	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.2**
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
1.84	**(mg) Total**	**Plating on external leads (pins) / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.25**
	Nickel	7440-02-0	90.00	
	Palladium	7440-05-3	5.00	
	Gold	7440-57-5	5.00	
		Total	**100.00**	
147.500				**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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MICROCHIP

Semiconductor Device Type: TL 44 (Lead) VTLA 6x6x0.9mm (6S)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	120.398	678,300
Epoxy Resin	Trade Secret	Mold Compound	6.943	12.323	69,426
Phenolic Resin	Trade Secret	Mold Compound	4.788	8.499	47,880
Carbon Black	1333-86-4	Mold Compound	0.239	0.425	2,394
Copper	7440-50-8	Lead Frame	10.217	18.134	102,165
Iron	7439-89-6	Lead Frame	0.242	0.429	2,415
Phosphorous	7723-14-0	Lead Frame	0.026	0.047	263
Zinc (Metal)	7440-44-0	Lead Frame	0.016	0.028	158
Silver (Ag)	7440-22-4	Die Attach	0.589	1.045	5,888
Proprietary Resin	Trade Secret	Die Attach	0.139	0.246	1,388
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.040	225
Silicon	7440-21-3	Chip (Die)	7.500	13.313	75,000
Gold	7440-57-5	Wire Bond	0.200	0.355	2,000
Nickel	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125	1.997	11,250
Palladium	7440-05-03	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625
		TOTALS:	**100.000**	**177.500**	**1,000,000**

0.1775 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e4

141.65	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.8**
	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**	
18.64	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.5**
	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**	
1.33	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hardener	Trade Secret	3	
		Total	**100.00**	
13.31	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**7.5**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.36	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.2**
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
2.22	**(mg) Total**	**Plating on external leads (pins) / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.25**
	Nickel	7440-02-0	90.00	
	Palladium	7440-05-3	5.00	
	Gold	7440-57-5	5.00	
		Total	**100.00**	
177.500				**100.000**

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MICROCHIP

Semiconductor Device Type: TL 124 (Lead) VTLA 9x9x0.9mm (8S)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	120.398	678,300
Epoxy Resin	Trade Secret	Mold Compound	6.943	12.323	69,426
Phenolic Resin	Trade Secret	Mold Compound	4.788	8.499	47,880
Carbon Black	1333-86-4	Mold Compound	0.239	0.425	2,394
Copper	7440-50-8	Lead Frame	10.217	18.134	102,165
Iron	7439-89-6	Lead Frame	0.242	0.429	2,415
Phosphorous	7723-14-0	Lead Frame	0.026	0.047	263
Zinc (Metal)	7440-44-0	Lead Frame	0.016	0.028	158
Silver (Ag)	7440-22-4	Die Attach	0.589	1.045	5,888
Proprietary Resin	Trade Secret	Die Attach	0.139	0.246	1,388
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.040	225
Silicon	7440-21-3	Chip (Die)	7.500	13.313	75,000
Gold	7440-57-5	Wire Bond	0.200	0.355	2,000
Nickel	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125	1.997	11,250
Palladium	7440-05-03	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625
		TOTALS:	**100.000**	**177.500**	**1,000,000**

0.1775 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e4

141.65	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**	
18.64	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.5**
	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**	
1.33	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hardener	Trade Secret	3	
		Total	**100.00**	
13.31	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**7.5**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.36	**(mg) Total**	**Wire Bond**	**% of Total Weight**	**0.2**
	Doped Gold	7440-57-5	100	
		Total	**100.00**	
2.22	**(mg) Total**	**Plating on external leads (pins) / annealed at 150°C for 1 hour**	**% of Total Weight**	**1.25**
	Nickel	7440-02-0	90.00	
	Palladium	7440-05-3	5.00	
	Gold	7440-57-5	5.00	
		Total	**100.00**	
177.500				**100.000**

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MICROCHIP

Semiconductor Device Type: B1KE 48 TFBGA 8x10x1.2mm (9T)

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
FUSED SILICA	60676-86-0	Mold Compound	38.981	55.509	389,810
EPOXY RESINS, CURED	Trade Secret	Mold Compound	4.905	6.984	49,048
HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4.905	6.984	49,048
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.258	1.791	12,580
CARBON BLACK	1333-86-4	Mold Compound	0.252	0.358	2,515
Copper	7440-50-8	Lead Frame	8.052	11.467	80,524
Glass fibers	65997-17-3	Lead Frame	4.800	6.835	48,000
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	4.800	6.835	48,000
Silica, chemically prepared	7631-86-9	Lead Frame	1.794	2.555	17,944
Nickel	7440-02-0	Lead Frame	0.875	1.246	8,748
Barite	7727-43-7	Lead Frame	0.561	0.799	5,608
Magnesium silicate	14807-96-6	Lead Frame	0.449	0.639	4,486
Araldite GY 250	25068-38-6	Lead Frame	0.449	0.639	4,486
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.179	0.256	1,794
Misc.	system	Lead Frame	0.336	0.479	3,365
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.112	0.160	1,122
Gold	7440-57-5	Lead Frame	0.022	0.032	224
Silver	7440-22-4	Die Attach	0.552	0.786	5,520
Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	Die Attach	0.138	0.197	1,380
Silicon	7440-21-3	Chip (Die)	7.650	10.894	76,500
Doped Gold	7440-57-5	Wire Bond	0.860	1.225	8,600
Tin	7440-31-5	Plating on external leads (pins)	17.257	24.574	172,569
Silver	7440-22-4	Plating on external leads (pins)	0.723	1.029	7,228
Copper	7440-50-8	Plating on external leads (pins)	0.090	0.129	904
		TOTALS:	**100.000**	**142.400**	**1,000,000**

0.1424 g Total Mass

71.63	(mg) Total	Mold Compound	% ot Total Weight	50.3
	FUSED SILICA	60676-86-0	77.50	
	EPOXY RESINS, CURED	Trade Secret	9.75	
	HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	9.75	
	CRYSTALLINE SILICA	14808-60-7	2.50	
	CARBON BLACK	1333-86-4	0.50	
		Total	**100.00**	

31.94	(mg) Total	Lead Frame	% of Total Weight	22.43
	Copper	7440-50-8	35.90	
	Glass fibers	65997-17-3	21.40	
	Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	21.40	
	Silica, chemically prepared	7631-86-9	8.00	
	Nickel	7440-02-0	3.90	
	Barite	7727-43-7	2.50	
	Magnesium silicate	14807-96-6	2.00	
	Araldite GY 250	25068-38-6	2.00	
	(2-Methoxymethylethoxy)propanol	34590-94-8	0.80	
	Misc.	system	1.50	
	Aluminium-hydroxide-oxide	24623-77-6	0.50	
	Gold	7440-57-5	0.10	
		Total	**100.00**	

0.98	(mg) Total	Die Attach	% of Total Weight	0.69
	Silver	7440-22-4	80.00	
	Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	20.00	
		Total	**100.00**	

10.89	(mg) Total	Chip (Die)	% of Total Weight	7.65
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

1.22	(mg) Total	Wire Bond	% of Total Weight	0.86
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	

25.73	(mg) Total	Plating on external leads (pins)	% of Total Weight	18.07
	Tin	7440-31-5	95.50	
	Silver	7440-22-4	4.00	
	Copper	7440-50-8	0.50	
		Total	**100.00**	

142.40 100.00

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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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Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.

MICROCHIP

Semiconductor Device Type: 129 TFBGA 7x7x1.0 (GW)

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
Silica, vitreous (or fused)	60676-86-0	Mold Compound	41.567	46.139	415,670
Epoxy Resin	Trade Secret	Mold Compound	2.549	2.829	25,487
Phenolic Resin	Trade Secret	Mold Compound	2.085	2.315	20,853
Carbon Black	1333-86-4	Mold Compound	0.139	0.154	1,390
Copper	7440-50-8	Lead Frame	13.175	14.625	131,753
Glass fibers	65997-17-3	Lead Frame	7.854	8.718	78,538
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	7.854	8.718	78,538
Silica, chemically prepared	7631-86-9	Lead Frame	2.936	3.259	29,360
Nickel	7440-02-0	Lead Frame	1.431	1.589	14,313
Barite	7727-43-7	Lead Frame	0.918	1.018	9,175
Magnesium silicate	14807-96-6	Lead Frame	0.734	0.815	7,340
Araldite GY 250	25068-38-6	Lead Frame	0.734	0.815	7,340
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.294	0.326	2,936
Misc.	system	Lead Frame	0.551	0.611	5,505
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.184	0.204	1,835
Gold	7440-57-5	Lead Frame	0.037	0.041	367
Silica, vitreous (or fused)	60676-86-0	Die Attach	0.280	0.311	2,800
Epoxy/Acrylic	Trade Secret	Die Attach	0.070	0.078	700
Silicon	7440-21-3	Chip (Die)	3.490	3.874	34,900
Copper	7440-50-8	Wire Bond	0.934	1.037	9,341
Palladium	7440-05-3	Wire Bond	0.026	0.029	259
Tin	7440-31-5	Plating on external leads (pins)	11.734	13.025	117,344
Silver	7440-22-4	Plating on external leads (pins)	0.365	0.405	3,648
Copper	7440-50-8	Plating on external leads (pins)	0.061	0.067	608
		TOTALS:	**100.000**	**111.000**	**1,000,000**

0.111 g Total Mass

51.44	(mg) Total	Mold Compound	% ot Total Weight	46.34
	Silica, vitreous (or fused)	60676-86-0	89.70	
	Epoxy Resin	Trade Secret	5.50	
	Phenolic Resin	Trade Secret	4.50	
	Carbon Black	1333-86-4	0.30	
		Total	**100.00**	

40.74	(mg) Total	Lead Frame	% of Total Weight	36.7
	Copper	7440-50-8	35.90	
	Glass fibers	65997-17-3	21.40	
Phenol, formaldehyde, (chloromethyl)oxirane polymer		9003-36-5	21.40	
	Silica, chemically prepared	7631-86-9	8.00	
	Nickel	7440-02-0	3.90	
	Barite	7727-43-7	2.50	
	Magnesium silicate	14807-96-6	2.00	
	Araldite GY 250	25068-38-6	2.00	
(2-Methoxymethylethoxy)propanol		34590-94-8	0.80	
	Misc.	system	1.50	
	Aluminium-hydroxide-oxide	24623-77-6	0.50	
	Gold	7440-57-5	0.10	
		Total	**100.00**	

0.39	(mg) Total	Die Attach	% of Total Weight	0.35
	Silica, vitreous (or fused)	60676-86-0	80.00	
	Epoxy/Acrylic	Trade Secret	20.00	
		Total	**100.00**	

3.87	(mg) Total	Chip (Die)	% of Total Weight	3.49
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

1.07	(mg) Total	Wire Bond	% of Total Weight	0.96
	Copper	7440-50-8	97.30	
	Palladium	7440-05-3	2.70	
		Total	**100.00**	

13.50	(mg) Total	Plating on external leads (pins)	% of Total Weight	12.16
	Tin	7440-31-5	96.50	
	Silver	7440-22-4	3.00	
	Copper	7440-50-8	0.50	
		Total	**100.00**	

111.00 100.00

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MICROCHIP

Semiconductor Device Type: MME 34 WFBGA 4x6x0.8mm (2M/2U)

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
FUSED SILICA	60676-86-0	Mold Compound	35.901	13.319	359,010
EPOXY RESINS, CURED	Trade Secret	Mold Compound	1.935	0.718	19,347
HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	1.935	0.718	19,347
CARBON BLACK	1333-86-4	Mold Compound	0.120	0.044	1,197
Copper	7440-50-8	Lead Frame	10.935	4.057	109,351
Glass fibers	65997-17-3	Lead Frame	6.518	2.418	65,184
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	6.518	2.418	65,184
Silica, chemically prepared	7631-86-9	Lead Frame	2.437	0.904	24,368
Nickel	7440-02-0	Lead Frame	1.188	0.441	11,879
Barite	7727-43-7	Lead Frame	0.762	0.283	7,615
Magnesium silicate	14807-96-6	Lead Frame	0.609	0.226	6,092
Araldite GY 250	25068-38-6	Lead Frame	0.609	0.226	6,092
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.244	0.090	2,437
Misc.	system	Lead Frame	0.457	0.170	4,569
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.152	0.057	1,523
Gold	7440-57-5	Lead Frame	0.030	0.011	305
FUSED SILICA	60676-86-0	Die Attach	9.576	3.553	95,760
Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	Die Attach	2.394	0.888	23,940
Silicon	7440-21-3	Chip (Die)	3.790	1.406	37,900
Doped Gold	7440-57-5	Wire Bond	0.950	0.352	9,500
0.00	0	Wire Bond	0.000	0.000	0
Tin	7440-31-5	Plating on external leads (pins)	12.358	4.585	123,577
Silver	7440-22-4	Plating on external leads (pins)	0.518	0.192	5,176
Copper	7440-50-8	Plating on external leads (pins)	0.065	0.024	647
		TOTALS:	**100.000**	**37.100**	**1,000,000**

0.0371 g Total Mass

14.80	(mg) Total	Mold Compound	% ot Total Weight	39.89
	FUSED SILICA	60676-86-0	90.00	
	EPOXY RESINS, CURED	Trade Secret	4.85	
	HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	4.85	
	CARBON BLACK	1333-86-4	0.30	
		Total	**100.00**	

11.30	(mg) Total	Lead Frame	% of Total Weight	30.46
	Copper	7440-50-8	35.90	
	Glass fibers	65997-17-3	21.40	
	Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	21.40	
	Silica, chemically prepared	7631-86-9	8.00	
	Nickel	7440-02-0	3.90	
	Barite	7727-43-7	2.50	
	Magnesium silicate	14807-96-6	2.00	
	Araldite GY 250	25068-38-6	2.00	
	(2-Methoxymethylethoxy)propanol	34590-94-8	0.80	
	Misc.	system	1.50	
	Aluminium-hydroxide-oxide	24623-77-6	0.50	
	Gold	7440-57-5	0.10	
		Total	**100.00**	

4.44	(mg) Total	Die Attach	% of Total Weight	11.97
	FUSED SILICA	60676-86-0	80.00	
	Basic Duromer:Phenolic resin	26834-02-6	20.00	
		Total	**100.00**	

1.41	(mg) Total	Chip (Die)	% of Total Weight	3.79
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.35	(mg) Total	Wire Bond	% of Total Weight	0.95
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	

4.80	(mg) Total	Plating on external leads (pins)	% of Total Weight	12.94
	Tin	7440-31-5	95.50	
	Silver	7440-22-4	4.00	
	Copper	7440-50-8	0.50	
		Total	**100.00**	

37.10 100.00

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MICROCHIP

Semiconductor Device Type: MAQE 48 WFBGA 4x6x0.8mm (3T)

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
FUSED SILICA	60676-86-0	Mold Compound	39.144	11.234	391,437
EPOXY RESINS, CURED	Trade Secret	Mold Compound	4.925	1.414	49,252
HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4.925	1.414	49,252
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.263	0.363	12,633
CARBON BLACK	1333-86-4	Mold Compound	0.253	0.072	2,526
Copper	7440-50-8	Lead Frame	8.616	2.473	86,160
Glass fibers	65997-17-3	Lead Frame	5.136	1.474	51,360
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	5.136	1.474	51,360
Silica, chemically prepared	7631-86-9	Lead Frame	1.920	0.551	19,200
Nickel	7440-02-0	Lead Frame	0.936	0.269	9,360
Barite	7727-43-7	Lead Frame	0.600	0.172	6,000
Magnesium silicate	14807-96-6	Lead Frame	0.480	0.138	4,800
Araldite GY 250	25068-38-6	Lead Frame	0.480	0.138	4,800
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.192	0.055	1,920
Misc.	system	Lead Frame	0.360	0.103	3,600
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.120	0.034	1,200
Gold	7440-57-5	Lead Frame	0.024	0.007	240
Solid Epoxy Resin	Trade Secret	Die Attach	0.020	0.006	195
Phenol Resin	Trade Secret	Die Attach	0.020	0.006	195
Fused Silica	60676-86-0	Die Attach	0.052	0.015	520
Liquid epoxy resin	Trade Secret	Die Attach	0.020	0.006	195
Synthetic Rubber	Trade Secret	Die Attach	0.020	0.006	195
Silicon	7440-21-3	Chip (Die)	5.980	1.716	59,800
Doped Gold	7440-57-5	Wire Bond	1.870	0.537	18,700
Tin	7440-31-5	Plating on external leads (pins)	16.722	4.799	167,221
Silver	7440-22-4	Plating on external leads (pins)	0.700	0.201	7,004
Copper	7440-50-8	Plating on external leads (pins)	0.088	0.025	876
		TOTALS:	**100.000**	**28.700**	**1,000,000**

0.0287 g Total Mass

14.50	(mg) Total	Mold Compound	% ot Total Weight	50.51
ECULAR EPOXY /	FUSED SILICA	60676-86-0	77.50	
	EPOXY RESINS, CURED	Trade Secret	9.75	
	EPOXY PHENOL RESIN	Trade Secret	9.75	
	CRYSTALLINE SILICA	14808-60-7	2.50	
	CARBON BLACK	1333-86-4	0.50	
		Total	**100.00**	

6.89	(mg) Total	Lead Frame	% of Total Weight	24
	Copper	7440-50-8	35.90	
	Glass fibers	65997-17-3	21.40	
, formaldehyde, (chloromethyl)oxirane polymer		9003-36-5	21.40	
	Silica, chemically prepared	7631-86-9	8.00	
	Nickel	7440-02-0	3.90	
	Barite	7727-43-7	2.50	
	Magnesium silicate	14807-96-6	2.00	
	Araldite GY 250	25068-38-6	2.00	
(2-Methoxymethylethoxy)propanol		34590-94-8	0.80	
	Misc.	system	1.50	
	Aluminium-hydroxide-oxide	24623-77-6	0.50	
	Gold	7440-57-5	0.10	
		Total	**100.00**	

0.04	(mg) Total	Die Attach	% of Total Weight	0.13
	Solid Epoxy Resin	Trade Secret	15.00	
	Phenol Resin	Trade Secret	15.00	
	Fused Silica	60676-86-0	40.00	
	Liquid epoxy resin	Trade Secret	15.00	
	Synthetic Rubber	Trade Secret	15	
		Total	**100.00**	

1.72	(mg) Total	Chip (Die)	% of Total Weight	5.98
	Doped Silicon	7440-21-3	100	

0.54	(mg) Total	Wire Bond	% of Total Weight	1.87
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	

5.03	(mg) Total	Plating on external leads (pins)	% of Total Weight	17.51
	Tin	7440-31-5	95.50	
	Silver	7440-22-4	4.00	
	Copper	7440-50-8	0.50	
		Total	**100.00**	

28.70 100.00

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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/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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MICROCHIP

Semiconductor Device Type: 25 VFBGA 3x3x0.8mm (FE)

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
fused silica	60676-86-0	Mold Compound	35.442	5.671	354,422
solid epoxy resin	25068-38-6	Mold Compound	5.030	0.805	50,297
phenol resin	108-95-2	Mold Compound	5.030	0.805	50,297
Cristalline Silica	112945-52-5	Mold Compound	1.144	0.183	11,438
carbon black	1333-86-4	Mold Compound	0.230	0.037	2,297
Copper	7440-50-8	Lead Frame	10.321	1.651	103,213
Glass fibers	65997-17-3	Lead Frame	6.153	0.984	61,525
Phenol polymer	9003-36-5	Lead Frame	6.153	0.984	61,525
Silica, chemically prepared	7631-86-9	Lead Frame	2.300	0.368	23,000
Nickel	7440-02-0	Lead Frame	1.121	0.179	11,213
Barite	7727-43-7	Lead Frame	0.719	0.115	7,188
Magnesium silicate	14807-96-6	Lead Frame	0.575	0.092	5,750
Araldite GY 250	25068-38-6	Lead Frame	0.575	0.092	5,750
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.230	0.037	2,300
Misc.	system	Lead Frame	0.431	0.069	4,313
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.144	0.023	1,438
Gold	7440-57-5	Lead Frame	0.029	0.005	288
Silver (Ag)	7440-22-4	Die Attach	0.905	0.145	9,050
Diester Resin	Trade Secret	Die Attach	0.226	0.036	2,263
Acrlate Resin	Trade Secret	Die Attach	0.085	0.014	849
Polymeric Resin	Trade Secret	Die Attach	0.034	0.005	339
Silicon	7440-21-3	Chip (Die)	5.000	0.800	50,000
Doped Gold	7440-57-5	Wire Bond	0.625	0.100	6,250
Tin	7440-31-5	SAC 305 Solder ball	16.888	2.702	168,875
Silver	7440-22-4	SAC 305 Solder ball	0.525	0.084	5,250
Copper	7440-50-8	SAC 305 Solder ball	0.088	0.014	875
		TOTALS:	**100.000**	**16.000**	**1,000,000**

0.0160 g Total Mass

7.50	(mg) Total	Mold Compound	% ot Total Weight	46.875
	fused silica	60676-86-0	75.61	
	solid epoxy resin	25068-38-6	10.73	
	phenol resin	108-95-2	10.73	
	Cristalline Silica	112945-52-5	2.44	
	carbon black	1333-86-4	0.49	
		Total	**100.00**	

4.60	(mg) Total	Lead Frame	% of Total Weight	28.75
	Copper	7440-50-8	35.90	
	Glass fibers	65997-17-3	21.40	
	Phenol polymer	9003-36-5	21.40	
	Silica, chemically prepared	7631-86-9	8.00	
	Nickel	7440-02-0	3.90	
	Barite	7727-43-7	2.50	
	Magnesium silicate	14807-96-6	2.00	
	Araldite GY 250	25068-38-6	2.00	
	(2-Methoxymethylethoxy)propanol	34590-94-8	0.80	
	Misc.	system	1.50	
	Aluminium-hydroxide-oxide	24623-77-6	0.50	
	Gold	7440-57-5	0.10	
		Total	**100.00**	

0.20	(mg) Total	Die Attach	% of Total Weight	1.25
	Silver (Ag)	7440-22-4	72.40	
	Diester Resin	Trade Secret	18.10	
	Acrlate Resin	Trade Secret	6.79	
	Polymeric Resin	Trade Secret	2.71	
		Total	**100.00**	

0.80	(mg) Total	Chip (Die)	% of Total Weight	5
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.10	(mg) Total	Wire Bond	% of Total Weight	0.625
	Doped Gold	7440-57-5	100.00	
		Total	**100.00**	

2.80	(mg) Total	SAC 305 Solder ball	% of Total Weight	17.5
	Tin	7440-31-5	96.50	
	Silver	7440-22-4	3.00	
	Copper	7440-50-8	0.50	
		Total	**100.00**	

16.00 100.00

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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MICROCHIP

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

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
solid epoxy resin	25068-38-6	Mold Compound / Halogen-Free	3.909	7.521	39,088
phenol resin	108-95-2	Mold Compound / Halogen-Free	3.630	6.983	36,296
Metal Hudroxide	14808-60-7	Mold Compound / Halogen-Free	0.558	1.074	5,584
Carbon black	1333-86-4	Mold Compound / Halogen-Free	0.279	0.537	2,792
Copper	7440-50-8	Substrate + Solder Mask (AUS308)Halogen-Free	7.762	14.933	77,616
Glass fibers	65997-17-3	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46,267
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46,267
Silica, chemically prepared	7631-86-9	Substrate + Solder Mask (AUS308)Halogen-Free	1.730	3.328	17,296
Nickel	7440-02-0	Substrate + Solder Mask (AUS308)Halogen-Free	0.843	1.622	8,432
Barite	7727-43-7	Substrate + Solder Mask (AUS308)Halogen-Free	0.541	1.040	5,405
Magnesium silicate	14807-96-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.832	4,324
Araldite GY 250	25068-38-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.832	4,324
(2-Methoxymethylethoxy)propanol	34590-94-8	Substrate + Solder Mask (AUS308)Halogen-Free	0.173	0.333	1,730
Misc.	system	Substrate + Solder Mask (AUS308)Halogen-Free	0.324	0.624	3,243
Aluminium-hydroxide-oxide	24623-77-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.108	0.208	1,081
Gold	7440-57-5	Substrate + Solder Mask (AUS308)Halogen-Free	0.022	0.042	216
Silver (Ag)	7440-22-4	Die Attach	0.550	1.059	5,502
Diester Resin	Trade Secret	Die Attach	0.138	0.265	1,376
Acrlate Resin	Trade Secret	Die Attach	0.052	0.099	516
Polymeric Resin	Trade Secret	Die Attach	0.021	0.040	206
For reporting purposes, silicon integrated circuit presumed to be all silicon	7440-21-3	Chip (Die)	7.940	15.277	79,400
Tin (Sn)	7440-31-5	Solder Ball (SAC405)	12.224	23.519	122,240
Silver (Ag)	7440-22-4	Solder Ball (SAC405)	0.512	0.985	5,120
Copper (Cu)	7440-50-8	Solder Ball (SAC405)	0.064	0.123	640
Gold (Au)	7440-57-5	Bond Wire	1.030	1.981	10,296.00
Palladium (Pd)	7440-05-3	Bond Wire	0.010	0.020	104.00
		TOTALS:	**100.000**	**192.400**	**1,000,000**

0.1924 g Total Mass

107.44	(mg) Total	Mold Compound / Halogen-Free	% ot Total Weight	55.84
	fused silica	60676-86-0	85.00	
	solid epoxy resin	25068-38-6	7.00	
	phenol resin	108-95-2	6.50	
	Metal Hudroxide	14808-60-7	1.00	
	Carbon black	1333-86-4	0.50	
		Total	**100.00**	

41.60	(mg) Total	Substrate + Solder Mask (AUS308) Halogen-Free	% of Total Weight	21.62
	Copper	7440-50-8	35.90	
	Glass fibers	65997-17-3	21.40	
	Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	21.40	
	Silica, chemically prepared	7631-86-9	8.00	
	Nickel	7440-02-0	3.90	
	Barite	7727-43-7	2.50	
	Magnesium silicate	14807-96-6	2.00	
	Araldite GY 250	25068-38-6	2.00	
	(2-Methoxymethylethoxy)propanol	34590-94-8	0.80	
	Misc.	system	1.50	
	Aluminium-hydroxide-oxide	24623-77-6	0.50	
	Gold	7440-57-5	0.10	
		Total	**100.00**	

1.46	(mg) Total	Die Attach	% of Total Weight	0.76
	Silver (Ag)	7440-22-4	72	
	Diester Resin	Trade Secret	18	
	Acrlate Resin	Trade Secret	7	
	Polymeric Resin	Trade Secret	3	
		Total	**100.00**	

15.28	Total (mg)	Chip (Die)	% of Total Weight	7.94
	For reporting purposes, silicon integrated circuit presumed to be all silicon	7440-21-3	100	
		Total	**100.00**	

24.63	(mg) Total	Solder Ball (SAC405)	% of Total Weight	12.80
	Tin (Sn)	7440-31-5	95.50	
	Silver (Ag)	7440-22-4	4.00	
	Copper (Cu)	7440-50-8	0.50	
		Total	**100.00**	

2.00	(mg) Total	Bond Wire	% of Total Weight	1.04
	Gold (Au)	7440-57-5	99.0000	
	Palladium (Pd)	7440-05-3	1.0000	
		Total	**100.00**	

192.40 **100.00**

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MICROCHIP

Semiconductor Device Type: MS and UA 8 (Lead) MSOP 3x3mm (A3)

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	17.755	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	1.567	61,207
Phenolic Resin	Trade Secret	Mold Compound	4.078	1.044	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.063	2,474
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314
Iron	7439-89-6	Lead Frame	0.247	0.063	2,468
Silver	7440-22-4	Lead Frame	0.200	0.051	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.003	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.144	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.027	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.014	563
Modified Amine	827-43-0	Die Attach	0.026	0.007	263
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.050	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	0.320	12,500
		TOTALS:	**100.000**	**25.600**	**1,000,000**

0.0256 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

20.43	(mg) Total	Mold Compound	% ot Total Weight	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**	

2.69	(mg) Total	Lead Frame	% of Total Weight	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**	

0.19	(mg) Total	Die Attach	% of Total Weight	0.75
	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**	

1.92	Total (mg)	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.05	(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		Total	**100.00**	

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**

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MICROCHIP

Semiconductor Device Type: P and PA 8 (Lead) PDIP (Small Outline - .300") (C4 / CK)

Termination Base Alloy: Copper Alloy (Cu)

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Fused Silica	60676-86-0	Mold Compound	57.456	279.638	574,560
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	42.723	87,780
Epoxy Resin	Trade Secret	Mold Compound	5.586	27.187	55,860
Phenol Resin	Trade Secret	Mold Compound	5.586	27.187	55,860
SiO2	14808-60-7	Mold Compound	1.995	9.710	19,950
Carbon Black	1333-86-4	Mold Compound	0.399	1.942	3,990
Copper	7440-50-8	Lead Frame	10.031	48.823	100,314
Iron	7439-89-6	Lead Frame	0.247	1.201	2,468
Silver	7440-22-4	Lead Frame	0.200	0.974	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.064	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87
Silver	7440-22-4	Die Attach	0.550	2.678	5,502
Epoxy Resin	9003-36-5	Die Attach	0.110	0.535	1,100
Diluent	3101-60-8	Die Attach	0.055	0.268	550
Phenolic hardener	Trade secret	Die Attach	0.022	0.107	220
Amine type hardener	827-43-0	Die Attach	0.011	0.054	110
Dicyandiamide	461-58-5	Die Attach	0.002	0.009	18
Silicon	7440-21-3	Chip (Die)	7.500	36.503	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.956	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.017	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500
		TOTALS:	**100.000**	**486.700**	**1,000,000**

0.4867 g Total Mass

388.39	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**
	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**
	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**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.97	**(mg) Total**	**Wire Bond - Copper, palladium coated (CuPd)**	**% of Total Weight**	**0.2**
	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**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
486.700				**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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MICROCHIP

Semiconductor Device Type: SP 28 (Lead) SPDIP .300" (M3 / MD)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Fused Silica	60676-86-0	Mold Compound	57.132	1192.631	571,320
Metal Hydro Oxide	Trade Secret	Mold Compound	8.729	182.207	87,285
Epoxy Resin	Trade Secret	Mold Compound	5.555	115.950	55,545
Phenol Resin	Trade Secret	Mold Compound	5.555	115.950	55,545
SiO2	14808-60-7	Mold Compound	1.984	41.411	19,838
Carbon Black	1333-86-4	Mold Compound	0.397	8.282	3,968
Copper	7440-50-8	Lead Frame Tape	9.984	208.409	99,837
Iron	7439-89-6	Lead Frame Tape	0.246	5.126	2,456
Silver	7440-22-4	Lead Frame Tape	0.199	4.156	1,991
Zinc	7440-66-6	Lead Frame Tape	0.013	0.273	131
Phosphorous	7723-14-0	Lead Frame Tape	0.009	0.180	86
Polyimide	25038-81-7	Lead Frame Tape	0.215	4.488	2,150
Poly - ethylene – terephthalate	25038-59-9	Lead Frame Tape	0.190	3.966	1,900
NBR	9003-18-3	Lead Frame Tape	0.035	0.731	350
Bismaleimide	79922-55-7	Lead Frame Tape	0.030	0.626	300
Phenol resin	453-20-5 / 9016-8	Lead Frame Tape	0.030	0.626	300
Silver	7440-22-4	Die Attach	0.550	11.485	5,502
Epoxy Resin	9003-36-5	Die Attach	0.110	2.297	1,100
Diluent	3101-60-8	Die Attach	0.055	1.148	550
Phenolic hardener	Trade secret	Die Attach	0.022	0.459	220
Amine type hardener	827-43-0	Die Attach	0.011	0.230	110
Dicyandiamide	461-58-5	Die Attach	0.002	0.038	18
Silicon	7440-21-3	Chip (Die)	7.500	156.563	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	4.102	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.073	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	26.094	12,500
		TOTALS:	**100.000**	**2,087.500**	**1,000,000**

2.0875 g Total Mass

Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

1656.43	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.35**
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**
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**	
10.44	**(mg) Total**	**Lead Frame Tape**	**% of Total Weight**	**0.5**
Tape	Polyimide	25038-81-7	43.00	
	Poly - ethylene – terephthala	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	73.36	
	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**	
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 palladium coated copper (CuPd)**	**% of Total Weight**	**0.2**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		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**	
2,087.500				**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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MICROCHIP

Semiconductor Device Type: OA and SN 08 (Lead) (SOIC) (Small Outline -150mil) (C2)

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	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, without excemption) 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

62.24	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**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**	
8.19	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.59	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	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 - Copper, palladium coated (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**

MICROCHIP

Semiconductor Device Type: SO & OI 28 SOIC (300mil) (N3 / NN)

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	67.830	522.562	678,300
Epoxy Resin	Trade Secret	Mold Compound	4.888	37.655	48,878
Phenolic Resin	Trade Secret	Mold Compound	4.888	37.655	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	15.062	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	1.844	2,394
Copper	7440-50-8	Lead Frame	10.031	77.282	100,314
Iron	7439-89-6	Lead Frame	0.247	1.901	2,468
Silver	7440-22-4	Lead Frame	0.200	1.541	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.101	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.067	87
Silver (Ag)	7440-22-4	Die Attach	0.600	4.622	6,000
Acrylate Urethane Oligomer	General	Die Attach	0.150	1.156	1,500
Silicon	7440-21-3	Chip (Die)	7.500	57.780	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	1.514	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.027	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	9.630	12,500
		TOTALS:	**100.000**	**770.400**	**1,000,000**

0.7704 g Total Mass

Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

614.78	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**	

80.89	(mg) Total	Lead Frame	% of Total Weight	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**	

5.78	(mg) Total	Die Attach	% of Total Weight	0.75
	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligome	General	20	
		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 palladium coated copper (CuPd)	% of Total Weight	0.2
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		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**	

770.400 **100.000**

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MICROCHIP

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Semiconductor Device Type: SM 08 (Lead) SOIJ (Small Outline-208 mil) (C3)

Basic Substance	CAS Number	"Contained In" Sub-Component	% 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).

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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

99.27	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**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**	
13.06	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.93	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	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 - Copper, palladium coated (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**

MICROCHIP

Semiconductor Device Type: CT and OT 05 (Lead) SOT-23 (C7)

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	11.097	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	0.979	61,207
Phenolic Resin	Trade Secret	Mold Compound	4.078	0.652	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.040	2,474
Copper	7440-50-8	Lead Frame	10.031	1.605	100,314
Iron	7439-89-6	Lead Frame	0.247	0.039	2,468
Silver	7440-22-4	Lead Frame	0.200	0.032	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.002	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.090	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.017	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.009	563
Modified Amine	827-43-0	Die Attach	0.026	0.004	263
Silicon	7440-21-3	Chip (Die)	7.500	1.200	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.031	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	0.200	12,500
		TOTALS:	**100.000**	**16.000**	**1,000,000**

0.0160 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

12.77	(mg) Total	Mold Compound	% ot Total Weight	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**	
1.68	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.12	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	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**	
1.20	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**7.5**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.03	**(mg) Total**	**Wire Bond - Copper, palladium coated (CuPd)**	**% of Total Weight**	**0.2**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		Total	**100.00**	
0.20	**(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**	
16.000				**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/

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MICROCHIP

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
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
Silver	7440-22-4	Lead Frame	0.200	0.034	2,000
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 Retanning Agent	Die Attach	0.019	0.003	188
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000
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

13.57	(mg) Total	Mold Compound	% ot Total Weight	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**	
1.79	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.13	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Epoxy resin	Trade Secret	75	
	Silicon dioxide	7631-86-9	23	
	Curing / Hardener	Trade Secret	3	
		Total	**100.00**	
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 - Copper, palladium coated (CuPd)**	**% of Total Weight**	**0.2**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		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**

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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MICROCHIP

Semiconductor Device Type: PT 44 (Lead) TQFP 10x10x1mm (T4/TY)

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	189.545	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	16.728	61,207
Phenolic Resin	Trade Secret	Mold Compound	4.078	11.145	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.676	2,474
Copper	7440-50-8	Lead Frame	10.000	27.331	100,003
Nickel	7440-02-0	Lead Frame	0.267	0.729	2,667
Silver	7440-22-4	Lead Frame	0.175	0.479	1,752
Silicon	7440-21-3	Lead Frame	0.047	0.129	473
Magnesium	7439-95-4	Lead Frame	0.011	0.029	105
Silver (Ag)	7440-22-4	Die Attach	0.600	1.640	6,000
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.410	1,500
Silicon	7440-21-3	Chip (Die)	7.500	20.498	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.537	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.010	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.416	12,500
		TOTALS:	**100.000**	**273.300**	**1,000,000**

0.2733 g Total Mass

Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

218.09	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**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**	
28.70	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.5**
	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**	
2.05	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligome	General	20	
		Total	**100.00**	
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 palladium coated copper (CuPd)**	**% of Total Weight**	**0.2**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		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**

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MICROCHIP

Semiconductor Device Type: **PT 64 (Lead) TQFP 10x10x1mm (V2/VG)**

Termination Base Alloy: Copper Alloy (Cu)

Package Homogeneous Materials

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	198.838	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	17.548	61,207
Phenolic Resin	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
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.563	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.010	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.584	12,500
		TOTALS:	**100.000**	**286.700**	**1,000,000**

0.2867 g Total Mass

228.79	(mg) Total	Mold Compound	% ot Total Weight	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**	
30.10	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.5**
	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**
	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligome	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 palladium coated copper (CuPd)**	**% of Total Weight**	**0.2**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		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**

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MICROCHIP

Semiconductor Device Type: MS and UA 8 (Lead) MSOP 3x3mm (A3)

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	17.755	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	1.567	61,207
Phenolic Resin	Trade Secret	Mold Compound	4.078	1.044	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.063	2,474
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314
Iron	7439-89-6	Lead Frame	0.247	0.063	2,468
Silver	7440-22-4	Lead Frame	0.200	0.051	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.003	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.144	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.027	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.014	563
Modified Amine	827-43-0	Die Attach	0.026	0.007	263
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.050	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	0.320	12,500
		TOTALS:	**100.000**	**25.600**	**1,000,000**

0.0256 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

20.43	(mg) Total	Mold Compound	% ot Total Weight	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**	

2.69	(mg) Total	Lead Frame	% of Total Weight	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**	

0.19	(mg) Total	Die Attach	% of Total Weight	0.75
	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**	

1.92	Total (mg)	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	

0.05	(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		Total	**100.00**	

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**

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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MICROCHIP

Semiconductor Device Type: P and PA 8 (Lead) PDIP (Small Outline - .300") (C4 / CK)

Termination Base Alloy: Copper Alloy (Cu)

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Fused Silica	60676-86-0	Mold Compound	57.456	279.638	574,560
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	42.723	87,780
Epoxy Resin	Trade Secret	Mold Compound	5.586	27.187	55,860
Phenol Resin	Trade Secret	Mold Compound	5.586	27.187	55,860
SiO2	14808-60-7	Mold Compound	1.995	9.710	19,950
Carbon Black	1333-86-4	Mold Compound	0.399	1.942	3,990
Copper	7440-50-8	Lead Frame	10.031	48.823	100,314
Iron	7439-89-6	Lead Frame	0.247	1.201	2,468
Silver	7440-22-4	Lead Frame	0.200	0.974	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.064	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87
Silver	7440-22-4	Die Attach	0.550	2.678	5,502
Epoxy Resin	9003-36-5	Die Attach	0.110	0.535	1,100
Diluent	3101-60-8	Die Attach	0.055	0.268	550
Phenolic hardener	Trade secret	Die Attach	0.022	0.107	220
Amine type hardener	827-43-0	Die Attach	0.011	0.054	110
Dicyandiamide	461-58-5	Die Attach	0.002	0.009	18
Silicon	7440-21-3	Chip (Die)	7.500	36.503	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.956	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.017	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500
		TOTALS:	**100.000**	**486.700**	**1,000,000**

0.4867 g Total Mass

388.39	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**
	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**
	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**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.97	**(mg) Total**	**Wire Bond - Copper, palladium coated (CuPd)**	**% of Total Weight**	**0.2**
	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**
	Tin	7440-31-5	100.00	
		Total	**100.00**	
486.700				**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/

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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MICROCHIP

Semiconductor Device Type: SP 28 (Lead) SPDIP .300" (M3 / MD)

Termination Base Alloy: Copper Alloy (Cu)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Fused Silica	60676-86-0	Mold Compound	57.132	1192.631	571,320
Metal Hydro Oxide	Trade Secret	Mold Compound	8.729	182.207	87,285
Epoxy Resin	Trade Secret	Mold Compound	5.555	115.950	55,545
Phenol Resin	Trade Secret	Mold Compound	5.555	115.950	55,545
SiO2	14808-60-7	Mold Compound	1.984	41.411	19,838
Carbon Black	1333-86-4	Mold Compound	0.397	8.282	3,968
Copper	7440-50-8	Lead Frame Tape	9.984	208.409	99,837
Iron	7439-89-6	Lead Frame Tape	0.246	5.126	2,456
Silver	7440-22-4	Lead Frame Tape	0.199	4.156	1,991
Zinc	7440-66-6	Lead Frame Tape	0.013	0.273	131
Phosphorous	7723-14-0	Lead Frame Tape	0.009	0.180	86
Polyimide	25038-81-7	Lead Frame Tape	0.215	4.488	2,150
Poly - ethylene – terephthalate	25038-59-9	Lead Frame Tape	0.190	3.966	1,900
NBR	9003-18-3	Lead Frame Tape	0.035	0.731	350
Bismaleimide	79922-55-7	Lead Frame Tape	0.030	0.626	300
Phenol resin	453-20-5 / 9016-8	Lead Frame Tape	0.030	0.626	300
Silver	7440-22-4	Die Attach	0.550	11.485	5,502
Epoxy Resin	9003-36-5	Die Attach	0.110	2.297	1,100
Diluent	3101-60-8	Die Attach	0.055	1.148	550
Phenolic hardener	Trade secret	Die Attach	0.022	0.459	220
Amine type hardener	827-43-0	Die Attach	0.011	0.230	110
Dicyandiamide	461-58-5	Die Attach	0.002	0.038	18
Silicon	7440-21-3	Chip (Die)	7.500	156.563	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	4.102	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.073	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	26.094	12,500
		TOTALS:	**100.000**	**2,087.500**	**1,000,000**

2.0875 g Total Mass

Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

1656.43	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**79.35**
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**
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**	
10.44	**(mg) Total**	**Lead Frame Tape**	**% of Total Weight**	**0.5**
Tape	Polyimide	25038-81-7	43.00	
	Poly - ethylene – terephthala	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	73.36	
	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**	
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 palladium coated copper (CuPd)**	**% of Total Weight**	**0.2**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		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**	
2,087.500				**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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MICROCHIP

Semiconductor Device Type: OA and SN 08 (Lead) (SOIC) (Small Outline -150mil) (C2)

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	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, without excemption) 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

62.24	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**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**	
8.19	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.59	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	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 - Copper, palladium coated (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**

MICROCHIP

Semiconductor Device Type: SO & OI 28 SOIC (300mil) (N3 / NN)

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	67.830	522.562	678,300
Epoxy Resin	Trade Secret	Mold Compound	4.888	37.655	48,878
Phenolic Resin	Trade Secret	Mold Compound	4.888	37.655	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	15.062	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	1.844	2,394
Copper	7440-50-8	Lead Frame	10.031	77.282	100,314
Iron	7439-89-6	Lead Frame	0.247	1.901	2,468
Silver	7440-22-4	Lead Frame	0.200	1.541	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.101	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.067	87
Silver (Ag)	7440-22-4	Die Attach	0.600	4.622	6,000
Acrylate Urethane Oligomer	General	Die Attach	0.150	1.156	1,500
Silicon	7440-21-3	Chip (Die)	7.500	57.780	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	1.514	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.027	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	9.630	12,500
		TOTALS:	**100.000**	**770.400**	**1,000,000**

0.7704 g Total Mass

Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

614.78	(mg) Total	Mold Compound	% ot Total Weight	79.8
	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**	

80.89	(mg) Total	Lead Frame	% of Total Weight	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**	

5.78	(mg) Total	Die Attach	% of Total Weight	0.75
	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligome	General	20	
		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 palladium coated copper (CuPd)	% of Total Weight	0.2
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		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**	

770.400 **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/

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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MICROCHIP

Termination Base Alloy: Copper Alloy (Cu)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

Semiconductor Device Type: SM 08 (Lead) SOIJ (Small Outline-208 mil) (C3)

Basic Substance	CAS Number	"Contained In" Sub-Component	% 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).

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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

99.27	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**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**	
13.06	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.93	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	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 - Copper, palladium coated (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**

MICROCHIP

Semiconductor Device Type: CT and OT 05 (Lead) SOT-23 (C7)

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	11.097	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	0.979	61,207
Phenolic Resin	Trade Secret	Mold Compound	4.078	0.652	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.040	2,474
Copper	7440-50-8	Lead Frame	10.031	1.605	100,314
Iron	7439-89-6	Lead Frame	0.247	0.039	2,468
Silver	7440-22-4	Lead Frame	0.200	0.032	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.002	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.090	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.017	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.009	563
Modified Amine	827-43-0	Die Attach	0.026	0.004	263
Silicon	7440-21-3	Chip (Die)	7.500	1.200	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.031	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	0.200	12,500
		TOTALS:	**100.000**	**16.000**	**1,000,000**

0.0160 g Total Mass

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)

JEDEC 97 Product Marking and/or Pkg. Labeling e3

12.77	(mg) Total	Mold Compound	% ot Total Weight	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**	
1.68	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.12	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	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**	
1.20	**Total (mg)**	**Chip (Die)**	**% of Total Weight**	**7.5**
	Doped Silicon	7440-21-3	100	
		Total	**100.00**	
0.03	**(mg) Total**	**Wire Bond - Copper, palladium coated (CuPd)**	**% of Total Weight**	**0.2**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		Total	**100.00**	
0.20	**(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**	
16.000				**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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MICROCHIP

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
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
Silver	7440-22-4	Lead Frame	0.200	0.034	2,000
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 Retanning Agent	Die Attach	0.019	0.003	188
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000
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

13.57	(mg) Total	Mold Compound	% ot Total Weight	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**	
1.79	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**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**	
0.13	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Epoxy resin	Trade Secret	75	
	Silicon dioxide	7631-86-9	23	
	Curing / Hardener	Trade Secret	3	
		Total	**100.00**	
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 - Copper, palladium coated (CuPd)**	**% of Total Weight**	**0.2**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		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**

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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MICROCHIP

Semiconductor Device Type: PT 44 (Lead) TQFP 10x10x1mm (T4/TY)

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	189.545	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	16.728	61,207
Phenolic Resin	Trade Secret	Mold Compound	4.078	11.145	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.676	2,474
Copper	7440-50-8	Lead Frame	10.000	27.331	100,003
Nickel	7440-02-0	Lead Frame	0.267	0.729	2,667
Silver	7440-22-4	Lead Frame	0.175	0.479	1,752
Silicon	7440-21-3	Lead Frame	0.047	0.129	473
Magnesium	7439-95-4	Lead Frame	0.011	0.029	105
Silver (Ag)	7440-22-4	Die Attach	0.600	1.640	6,000
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.410	1,500
Silicon	7440-21-3	Chip (Die)	7.500	20.498	75,000
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.537	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.010	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.416	12,500
		TOTALS:	**100.000**	**273.300**	**1,000,000**

0.2733 g Total Mass

Package Homogeneous Materials

JEDEC 97 Product Marking and/or Pkg. Labeling e3

218.09	**(mg) Total**	**Mold Compound**	**% ot Total Weight**	**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**	
28.70	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.5**
	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**	
2.05	**(mg) Total**	**Die Attach**	**% of Total Weight**	**0.75**
	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligome	General	20	
		Total	**100.00**	
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 palladium coated copper (CuPd)**	**% of Total Weight**	**0.2**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		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**

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

Semiconductor Device Type: **PT 64 (Lead) TQFP 10x10x1mm (V2/VG)**

Termination Base Alloy: Copper Alloy (Cu)

Package Homogeneous Materials

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	198.838	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	17.548	61,207
Phenolic Resin	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
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.563	1,965
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.010	35
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.584	12,500
		TOTALS:	**100.000**	**286.700**	**1,000,000**

0.2867 g Total Mass

228.79	(mg) Total	Mold Compound	% ot Total Weight	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**	
30.10	**(mg) Total**	**Lead Frame**	**% of Total Weight**	**10.5**
	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**
	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligome	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 palladium coated copper (CuPd)**	**% of Total Weight**	**0.2**
	Copper	7440-50-8	98	
	Palladium	7440-05-3	2	
		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).

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