



Introduction and Methodology

Microchip Technology Incorporated's (Microchip) semiconductor devices are assembled at our test facility outside Bangkok, Thailand, and by sub-contracted assembly sites throughout the world. Frequently, the 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 copper-alloy lead frame.

Of necessity, the semiconductor device material data presented is calculated using a mass balance methodology which creates a composite average constituent list representing the BOM variability across multiple assembly sites. Where there is a material, environmentally significant, difference at a specific assembly site, the substance list and concentrations for that assembly site are presented on a separate tab and the assembly site is identified.

Ozone Depleting Materials

Microchip Technology Incorporated's semiconductor devices neither contain nor are manufactured with Class I or Class II Ozone Depleting Materials.

Brominated Flame Retardant Polymers

Many of the mold compounds used by Microchip or its sub-contract assembly houses contain one of two brominated phenolic/epoxy polymers: CAS # 68541-56-0 or CAS # 40039-93-8. Neither of these brominated phenolic/epoxy polymers is regulated by European Union Directive 2003/11/EC (6 February 2003) or by European Union Directive 2002/95/EC (27 January 2003).

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). Microchip's semiconductor devices do contain DecaBDE

Red Phosphorous

The mold compounds used by Microchip and its sub-contract assembly houses to assemble Microchip's semiconductor devices **do not** contain inorganic particulate red phosphorous. Diantimony trioxide is the primary inorganic flame retardant material in most mold compounds; one unique mold compound uses a trade secret "metal hydroxide" instead of diantimony trioxide. Certain "green" mold compounds neither contain an inorganic flame retardant nor a brominated flame retardant.

Organophosphorous Compound

One mold compound used by one sub-contract assembly site to manufacture one version of Microchip's 14 lead -SL (SOIC) semiconductor device contains a trade secret organophosphorous catalyst.



One mold compound used by one sub-contract assembly site to manufacture one version of Microchip's 100 lead –PF (TQFP 14x14) semiconductor device contains a trade secret, aromatic organophosphorous flame retardant.

Absence of Chemical Substances

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

- The chemical substance is **NOT** an intentional ingredient in the semiconductor device or any of its homogenous materials.
- 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.

Alloy 42 Lead Frame

Microchip's 4 lead SOT-143 semiconductor device, two versions of Microchip's 3 lead SOT-23 semiconductor device (SnPb and Pb-free), and two versions of Microchip's 3 lead TO-92 semiconductor device (SnPb and Pb-free) use an Alloy 42 lead frame, the primary constituents of which are iron and nickel. In this respect, these five semiconductor devices differ from all other Microchip standard products that use a copper-alloy lead frame.

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

JIG is an acronym for Joint Industry Guide. Specifically, it refers to the JIG-101 document titled, "Material Composition Declaration for Electronic Products (Electronics Industry Association, April 2005)." It is important to recognize that the JIG-101 guideline is **NOT law** – it is a guideline.

Microchip's Pb-free semiconductor devices **neither** contain, JIG-101 "Level A Materials and Substances." JIG-101 Level A materials are prohibited from intentional use and many have maximum allowable impurity concentrations.

Many, but not all, of Microchip's Pb-free semiconductor devices contain two, JIG-101 "Level B Materials and Substances" above the reporting threshold: diantimony trioxide and/or brominated flame retardants other than PBB or PBDE, both are used as flame retardants in the mold compounds. Level B materials may



be intentionally added but their presence must be reported (declared) if their individual maximum concentration exceeds a specified threshold concentration.

When using the "RoHS Device Search" (see additional web resources below) function or the full chemical substances lists in this document, with respect to JIG-101, if the substance does not appear on the chemical substance list, it is not an intentional ingredient in any homogenous material and its presence, if any, as a trace impurity is less than the regulatory (legal) limit or less than the reportable threshold limit in numerous industry guidelines like JIG-101.

Microchip Technology Incorporated's General Statement of Warranty

The exclusive, limited product warranties Microchip Technology Incorporated and each of its selling subsidiaries offer are contained in Microchip Technology Incorporated's standard terms and conditions of sale, which are provided to the customer in Microchip Technology Incorporated's quotations, sales order confirmations, and invoices.

Additional Web based Resources

FAQ's a general overview of Microchip's Pb-Free transition & strategy

www.microchip.com/pbfree

A "Gateway" to Microchip's Pb-Free products which includes more links and is a perfect starting point to understanding Microchip's Pb-Free Products

Microchip's RoHS Device Search:

www.microchip.com > Corporate > Environmental Health and Safety > Resources (box) – RoHS Device Search

Microchip's corporate Certificate of RoHS Compliance (CoC) for all of its Pb-free semiconductor devices is published on Microchip's website:

www.microchip.com > Corporate > Environmental Health and Safety > Certificate of Compliance with EU Directive 2002/95/EC (RoHS Directive) for Pb-free Semiconductor Devices

Microchip's Corporate Certificate of RoHS Compliance (CoC) for Exempt Applications-SnPb-Plated Semiconductor Devices (5 of 6) is published on Microchip's website:

www.microchip.com > Corporate > Environmental Health and Safety > RoHS Certificate of Compliance Exempt SnPb Applications

Trace metals analytical reports by package type are available on Microchip's website:

www.microchip.com > Corporate > Environmental Health and Safety > Pb-free Laboratory Analytical Reports



How to use this document:

This document is bookmarked and arranged numerically/alphabetically by pin/package family, i.e. 03 (number of pins/leads) DDPAK (Double Deca-watt Package) to 20 (number of pins/leads) TSSOP (Thin Shrink Small Outline Package).

Additionally, this document is cross referenced by "Style Designator" an alpha alpha coding found in Microchip's semiconductor catalog /part numbers.

For all Microchip Analog Products beginning with "MCP":

MCP112-240E/TOG

MCP	112	"Blank"	-	240	N/A	E	TO	G
MCP	XXXXXX	X	-	XXX	X		XX(G)	
Product Prefix	Product Part/ID number	Tape and Reel	Reset Voltage Thresholds or Performance Options	Supervisor Bond Options	Operation Temperature Range		Package Type	Matte-Tin pin/lead Plating
							TO-92 (Transistor Outline) with 3 Pins and Matte-Tin pin/lead plating	

For all Microchip Picmicro®, KeeLoq®, RFID, RfHCS and Memory Products

PIC16C64A-04E/PQ014

PIC	16C64	A	-	04	E	PQ	014
MCP	XXXXXX	X	-	XXX	X	XX	XXX
Product Prefix	Device Type	Option	Speed or Crystal Freq.	Process Temp.		Package Type	Special Requirements
						MQFP (Metric Plastic Quad Flat pack Package) with 44 pins	

For all Microchip Analog Products beginning with "TC"
(formerly TelCom Semiconductor Products:

TC1017R-4.0VLTTRG

TC	1017	R	-	4.0	V	LT	TR	G
MCP	XXXXXX	X	-	X.X	X	XX	XXX	
Product Prefix	Product Part Number (2>6)	Electrical Performance Grade Option	Output or Detect Voltage	Operating Temp Range		Package Type and number of	Taping Direction	Matte-Tin pin/lead finish
						SC70 (Small Outline Transistor Plastic Packages) with 5 pin/leads		

Links	RoHS Compliant Without exemption(s) (Yes / No)	Package				Total Mass (g)	Assembly Site	Page Number
		Style Designator	# of Pins	Family	Package Width			
EBG 3 (DDPAK) CARSEM	Y	EB (G)	3	DDPAK	N/A	1.4200	CARSEM	6
ETG 5 (DDPAK) CARSEM	Y	ET (G)	5	DDPAK	N/A	1.4625	CARSEM	7
MCG 8 (DFN) 2x3 CARSEM	Y	MC (G)	8	DFN	2x3mm	0.0170	CARSEM	8
MFG 8 (DFN) 3x3 ANAP	Y	MF (G)	8	DFN	3x3mm	0.0222	ANAP	9
MFG 8 (DFN) 3x3 CARSEM	Y	MF (G)	8	DFN	3x3mm	0.0222	CARSEM	10
MFG 8 (DFN) 3x3 NSEB	Y	MF (G)	8	DFN	3x3mm	0.0222	NSEB	11
MFG (DFN) 8 6x5 ASAT	Y	MF (G)	8	DFN-S	6x5x0.9mm	0.0710	ASAT	12
MFG 8 (DFN) 6x5 NSEB	Y	MF (G)	8	DFN-S	6x5x0.9mm	0.0710	NSEB	13
MFG 10 (DFN) 3x3 ANAP	Y	MF (G)	10	DFN	3x3mm	0.0248	ANAP	14
MFG 10 (DFN) 3x3 NSEB	Y	MF (G)	10	DFN	3x3mm	0.0248	NSEB	15
PQG 44 (MQFP) ALPHA	Y	PQ (G)	44	MQFP	10x10x2mm	0.4818	ALPHA	16
PQG 44 (MQFP) ANAP	Y	PQ (G)	44	MQFP	10x10x2mm	0.4818	ANAP	17
PQG 64 (MQFP) ALPHA	Y	PQ (G)	64	MQFP	14x14x2.7 mm	1.1602	ALPHA	18
PQG 64 (MQFP) ANAP	Y	PQ (G)	64	MQFP	14x14x2.7 mm	1.1602	ANAP	19
MSG or UAG 8 (MSOP) ANAP	Y	MS (G) and UA (G)	8	MSOP	3x3mm	0.0256	ANAP	20
MSG or UAG 8 (MSOP) UNISEM	Y	MS (G) and UA (G)	8	MSOP	3x3mm	0.0256	UNISEM	21
MSG or UAG 8 (MSOP) Various	Y	MS (G) and UA (G)	8	MSOP	3x3mm	0.0256	Various, Composite	22
UNG 10 (MSOP) ANAP	Y	UN (G)	10	MSOP	3x3mm	0.0258	ANAP	23
UNG 10 (MSOP) NSEB	Y	UN (G)	10	MSOP	3x3mm	0.0258	NSEB	24
PG or PAG 8 (PDIP) Various	Y	P (G) and PA (G)	8	PDIP	.300"	0.4867	Various, Composite	25
PG or PAG 8 (PDIP) UNISEM	Y	P (G) and PA (G)	8	PDIP	.300"	0.4867	UNISEM	26
PG or PAG 14 (PDIP) Various	Y	P (G) and PD (G)	14	PDIP	.300"	0.9533	Various, Composite	27
PG or PE 16 (PDIP) ALPHA	Y	P (G) and PE (G)	16	PDIP	.300"	0.9867	ALPHA	28
PG or PEG 16 (PDIP) Various	Y	PG and -PEG	16	PDIP	.300"	0.9867	Various, Composite	29
PG 18 (PDIP) ATEs	Y	P (G)	18	PDIP	.300"	1.2480	ATEs	30
PG 18 (PDIP) Various	Y	P (G)	18	PDIP	.300"	1.2480	Various, Composite	31
PG 20 (PDIP) Various	Y	P (G)	20	PDIP	.300"	1.3591	Various, Composite	32
PG 24 (PDIP) Various	Y	PG (G)	24	PDIP	.600"	3.6200	ANAP	33
PG or PLG 28 (PDIP) Various	Y	P (G) and PL (G)	28	PDIP	.600"	4.0667	Various, Composite	34
PG or PLG 40 (PDIP) Various	Y	P (G) and PL (G)	40	PDIP	.600"	6.5000	Various, Composite	35
SPG 24 (SPDIP) Various	Y	SP (G)	24	SPDIP	.300"		Product under review	36
SPG 28 (SPDIP) Various	Y	SP (G)	28	SPDIP	.300"	2.0875	Various, Composite	37
LG 28 (PLCC) ANAP	Y	L (G)	28	PLCC	N/A	1.1872	ANAP	38
LG 44 (PLCC) Various	Y	L (G)	44	PLCC	N/A	2.4667	Various, Composite	39
LG 68 (PLCC) Various	Y	L (G)	68	PLCC	N/A	4.8526	Various, Composite	40
LGG 84 (PLCC) ALPHA	Y	LG (G)	84	PLCC	N/A	7.0875	ALPHA	41
LGG 84 (PLCC) ANAP	Y	LG (G)	84	PLCC	N/A	7.0875	ANAP	42
MLG 16 (QFN) 4x4	Y	ML (G)	16	QFN	4x4 mm	0.0447	Various, composite	43
MLG 20 (QFN) 4x4 NSEB	Y	ML (G)	20	QFN	4x4 mm		Product under review	44
MLG 28 (QFN) 6x6 Various	Y	ML (G)	28	QFN	6x6 mm	0.0862	Various, Composite	45
MLG 44 (QFN) 8x8 UNISEM	Y	ML (G)	44	QFN	8x8 mm	0.1865	UNISEM	46
MLG MMG 28 (QFN-S) UNISEM	Y	ML (G) and MM (G)	28	QFN-S	6x6 mm		Product under review	47
QRG 16 (QSOP) HANA	Y	QR (G)	16	QSOP	N/A	0.0785	HANA	48
QRG 16 (QSOP) UNISEM	Y	QR (G)	16	QSOP	N/A	0.0785	UNISEM	49
LBG 3 (SC-70) UNISEM	Y	LB (G)	3	SC-70	N/A	0.0055	UNISEM	50
LBG 3 (SC-70) Various	Y	LB (G)	3	SC-70	N/A	0.0055	Various, Composite	51
LTG 5 (SC-70) UNISEM	Y	LT (G)	5	SC-70	N/A	0.0062	UNISEM	52
LTG 5 (SC-70) Various	Y	LT (G)	5	SC-70	N/A	0.0062	Various, Composite	53
OAG or SNG 8 (SOIC-N) Various (MP)	Y	OA (G) and SN (G)	8	SOIC	150 mil	0.0780	Various, Composite	54
OAG or SNG 8 (SOIC-N) Various (EME)	Y	OA (G) and SN (G)	8	SOIC	150 mil	0.0780	Various, Composite	55
SLG 14 (SOIC-N) HANA	Y	SL (G)	14	SOIC	150 mil	0.1432	HANA	56
SLG 14 (SOIC-N) Various	Y	SL (G)	14	SOIC	150 mil	0.1432	Various, Composite	57
SLG 16 (SOIC-N) Various	Y	SL (G)	16	SOIC	150 mil	0.1460	Various, Composite	58
OEG 16 (SOIC-W) Various	Y	OE (G)	16	SOIC	.300"	0.4147	Various, Composite	59
SOG 18 (SOIC-W) Various	Y	SO (G)	18	SOIC	.300"	0.4810	Various, Composite	60
SOG 18 (SOIC-W) Various (2)	Y	SO (G)	18	SOIC	.300"	0.4810	Various, Composite	61
SOG 20 (SOIC-W) NSEB	Y	SO (G)	20	SOIC	.300"	0.5289	NSEB	62
SOG 20 (SOIC-W) Various	Y	SO (G)	20	SOIC	.300"	0.5289	Various, Composite	63
OGG 24 (SOIC-W) ANAP	Y	OG (G)	24	SOIC	.300"	0.6650	ANAP	64
SOG_OIG 28 (SOIC) Various	Y	SO (G) and OI (G)	28	SOIC	.300"	0.7704	Various, Composite	65
SMG 8 (SOIJ_SO) HANA	Y	SM (G)	8	SOIJ	208 mil	0.1244	HANA	66
SMG 8 (SOIJ_SO) Various	Y	SM (G)	8	SOIJ	208 mil	0.1244	Various, Composite	67
CBG NBG TTG 3 (SOT-23) CARSEM	Y	CB (G) and NB (G) and TT (G)	3	SOT-23	N/A	0.0083	CARSEM	68
CBG NBG TTG 3 (SOT-23) Various	Y	CB (G) and NB (G) and TT (G)	3	SOT-23	N/A	0.0083	Various, Composite	69
CTG OTG 5 (SOT-23) Various	Y	CT (G) and OT (G)	5	SOT-23	N/A	0.0160	Various, Composite	70
CHG OTG 6 (SOT-23) Various	Y	CH (G) and OT (G)	6	SOT-23	N/A	0.0170	Various, Composite	71
MBG 3 (SOT_89) Various	Y	MB (G)	3	SOT-89	N/A	0.0489	Various, Composite	72
RCG 4 (SOT-143) Various	Y	RC (G)	4	SOT-143	N/A	0.0088	Various, Composite	73
DBG 3 (SOT-233) HANA	Y	DB (G)	3	SOT-223	N/A	0.1179	HANA	74
DBG 3 (SOT-233) UNISEM	Y	DB (G)	3	SOT-223	N/A	0.1179	UNISEM	75
SSG 20 (SSOP) Various	Y	SS (G)	20	SSOP	.209"	0.1642	Various, Composite	76
SSG 24 (SSOP) Various	Y	SS (G)	24	SSOP	.209"	0.1898	Various, Composite	77
SSG SIG 28 (SSOP) Various	Y	SS (G) and SI (G)	28	SSOP	.209"	0.2292	Various, Composite	78
TOG ZBG 3 (TO-92) CARSEM	Y	TO (G) and ZB (G)	3	TO-92	N/A	0.2034	CARSEM	79
TOG ZBG 3 (TO-92) CARSEM & GTK	Y	TO (G) and ZB (G)	3	TO-92	N/A	0.2034	CARSEM & GTK	80
ABG 3 (TO-220) CARSEM	Y	AB (G)	3	TO-220	N/A	1.8800	CARM	81
ATG 5 (TO-220) CARSEM	Y	AT (G)	5	TO-220	N/A	1.9560	CARM	82
PTG 44 (TQFP) 10x10 ANAK	Y	PT (G)	44	TQFP	10x10x1mm	0.2733	ANAP	83
PTG 44 (TQFP) 10x10 MTAI	Y	PT (G)	44	TQFP	10x10x1mm	0.2733	MTAI	84
PTG 64 (TQFP) 10x10 ANAK	Y	PT (G)	64	TQFP	10x10x1mm	0.2867	ANAK	85
PTG 64 (TQFP) 10x10 ANAP	Y	PT (G)	64	TQFP	10x10x1mm	0.2867	ANAP	86
PTG 64 (TQFP) 10x10 MTAI	Y	PT (G)	64	TQFP	10x10x1mm	0.2867	MTAI	87
PTG 64 (TQFP) 14x14 ANAP	Y	PT (G)	64	TQFP	14x14x1mm	0.5240	ANAP	88
PTG 80 (TQFP) 12x12 ANAK	Y	PT (G)	80	TQFP	12x12x1mm	0.3667	ANAK	89
PTG 80 (TQFP) 12x12 ANAP	Y	PT (G)	80	TQFP	12x12x1mm	0.3667	ANAP	90
PTG 80 (TQFP) 12x12 CARSEM	Y	PT (G)	80	TQFP	12x12x1mm	0.3667	CARSEM	91
PFG 80 (TQFP) 14x14 ANAP	Y	PF (G)	80	TQFP	14x14x1mm	0.5270	ANAP	92
PFG 100 (TQFP) 14x14 ANAP	Y	PF (G)	100	TQFP	14x14x1mm		Product under review	93
STG 8 (TSSOP) ATEs	Y	ST (G)	8	TSSOP	4.4mm	0.0337	ATEs	94
STH 8 (TSSOP) NSEB	Y	STH GREEN	8	TSSOP	4.4mm	0.0337	NSEB	95
STG 8 (TSSOP) Various	Y	ST (G)	8	TSSOP	4.4mm	0.0337	Various, Composite	96
STG 14 (TSSOP) NSEB	Y	ST (G)	14	TSSOP	4.4mm	0.0563	NSEB	97
STG 14 (TSSOP) Various	Y	ST (G)	14	TSSOP	4.4mm	0.0563	Various, Composite	98
STG 20 (TSSOP) ANAP	Y	ST (G)	20	TSSOP	4.4mm	0.0737	ANAP	99



Semiconductor Device Type: EB 3 (Lead) DDPAK (F4)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
888.78	(mg) Total	Mold Compound	% of Total Weight	62.59
10		7631-86-9	71.84	
		9003-35-4	12.02	
		37382-79-9	12.02	
		JGPSSI (A01)	2.53	
		JGPSSI (B08)	1.30	
		1333-86-4	0.30	
		Total	100.00	
390.50	(mg) Total	Lead Frame	% of Total Weight	27.5
10		JGPSSI (D01)	95.54	
		7439-89-6	2.35	
		JGPSSI (D04)	1.91	
		7440-22-4	0.13	
		7440-66-6	0.13	
		Part of Alloy	0.08	
		7723-14-0	0.08	
		Total	100.00	
10.65	(mg) Total	Die Attach	% of Total Weight	0.75
10		JGPSSI (D04)	39	
		7440-22-4	26	
		14808-60-7	16	
		13561-08-5	14	
		54208-63-8	14	
		827-43-0	5	
		Total	100.00	
106.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
		7440-21-3	100	
		Total	100.00	
2.84	(mg) Total	Wire Bond	% of Total Weight	0.2
		JGPSSI (D02)	100	
		7440-57-5	100	
		Total	100.00	
20.73	(mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.46
		7440-31-5	100.00	
		Total	100.00	
1,420.000				100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	44.962	638.456	449,617
Copper	7440-50-8	Lead Frame	26.273	373.074	262,728
Phenol-formaldehyde resin	9003-35-4	Mold Compound	7.521	106.794	75,207
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	7.521	106.794	75,207
Silicon	7440-21-3	Chip (Die)	7.500	106.500	75,000
Diantimony Trioxide	1309-64-4	Mold Compound	1.585	22.514	15,855
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.460	20.732	14,600
Silver	7440-22-4	Lead Frame+ Die Attach	0.819	11.634	8,193
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	0.814	11.554	8,137
Iron	7439-89-6	Lead Frame	0.646	9.177	6,463
Gold	7440-57-5	Wire Bond	0.200	2.840	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	2.796	1,969
Carbon Black	1333-86-4	Mold Compound	0.188	2.666	1,878
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	1.651	1,163
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	1.449	1,020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.559	394
Zinc	7440-66-6	Lead Frame	0.034	0.488	344
Phosphorous	7723-14-0	Lead Frame	0.023	0.322	227
TOTALS:			100.000	1,420.000	1,000,000

Various Assembly Sites / Material compilation 1.4200 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

Microchip's corporate Certificate of RoHS Compliance for all of its Pb-free semiconductor devices is published on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Certificate of RoHS Compliance

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.

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports

JGPSSI = Japan Green Procurement Survey Standardization Initiative



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Semiconductor Device Type: ET 5 (Lead) DDPAK (J7)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			915.38 (mg) Total	62.59
			Mold Compound	
			% of Total Weight	
			Total 100.00	
			402.19 (mg) Total	27.5
			Lead Frame	
			% of Total Weight	
			Total 100.00	
			109.97 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			Total 100.00	
			109.69 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			Total 100.00	
			2.93 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			Total 100.00	
			21.35 (mg) Total	1.46
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			Total 100.00	
			1,462.500	100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	44.962	657.565	449,617
Copper	7440-50-8	Lead Frame	26.273	384.240	262,728
Phenol-formaldehyde resin	9003-35-4	Mold Compound	7.521	109.990	75,207
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	7.521	109.990	75,207
Silicon	7440-21-3	Chip (Die)	7.500	109.688	75,000
Diantimony Trioxide	1309-64-4	Mold Compound	1.585	23.187	15,855
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.460	21.353	14,600
Silver	7440-22-4	Lead Frame + Die Attach	0.819	11.982	8,193
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	0.814	11.900	8,137
Iron	7439-89-6	Lead Frame	0.646	9.451	6,463
Gold	7440-57-5	Wire Bond	0.200	2.925	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	2.880	1,969
Carbon Black	1333-86-4	Mold Compound	0.188	2.746	1,878
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	1.700	1,163
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	1.492	1,020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.576	394
Zinc	7440-66-6	Lead Frame	0.034	0.503	344
Phosphorous	7723-14-0	Lead Frame	0.023	0.332	227
TOTALS:			100.000	1,462.500	1,000,000

Various Assembly Sites / Material compilation 1.4625 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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JGPSSI = Japan Green Procurement Survey Standardization Initiative



Microchip Technology Inc. 2355 W. Chandler Blvd. Chandler, AZ 85224-6199 USA (480) 792-7200 FAX (480) 792-7277



Semiconductor Device Type: MC 10 (Lead) DFN 2x3 mm (B3 / BY)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			13.57 (mg) Total	Mold Compound	% of Total Weight	79.8
			Total			100.00
			1.79 (mg) Total	Lead Frame	% of Total Weight	10.5
			Total			100.00
			0.13 (mg) Total	Die Attach	% of Total Weight	0.75
			Total			100.00
			1.28 Total (mg)	Chip (Die)	% of Total Weight	7.5
			Total			100.00
			0.21 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
			Total			100.00
TOTALS:			100.000	17.000	1,000,000	

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	71.820	12,209	718,200
Copper	7440-50-8	Lead Frame	10.031	1,705	100,314
Silicon	7440-21-3	Chip (Die)	7.500	1,275	75,000
Epoxy Resin	Trade Secret	Mold Compound	3.870	0,658	38,703
Phenolic Resin	Trade Secret	Mold Compound	3.870	0,658	38,703
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0,213	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0,084	4,954
Iron	7439-89-6	Lead Frame	0.247	0,042	2,468
Carbon Black	1333-86-4	Mold Compound	0.239	0,041	2,394
Gold	7440-57-5	Wire Bond	0.200	0,034	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0,033	1,969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0,020	1,163
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0,017	1,020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0,007	394
Zinc	7440-66-6	Lead Frame	0.013	0,002	131
Phosphorous	7723-14-0	Lead Frame	0.009	0,001	87

Various Assembly Sites / Material compilation 0.0170 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: MF 8 (Lead) DFN 3x3 mm (A7 / AJ)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			17.72 (mg) Total	Mold Compound	% of Total Weight	79.8
				60676-86-0	85.00	
				Trade Secret	8.70	
				Trade Secret	6.00	
				1333-86-4	0.30	
			Total	100.00		
			2.33 (mg) Total	Lead Frame	% of Total Weight	10.5
				JGPSSI (D01)	95.54	
				7439-89-6	2.35	
				JGPSSI (D04)	1.91	
				7440-66-6	0.13	
				Part of Alloy	0.08	
			Total	100.00		
			0.17 (mg) Total	Die Attach	% of Total Weight	0.75
				JGPSSI (D04)	39	
				14808-60-7	26	
				13561-08-5	16	
				54208-63-8	14	
				827-43-0	5	
			Total	100.00		
			1.67 Total (mg)	Chip (Die)	% of Total Weight	7.5
				Silicon	100	
				7440-21-3	100	
			Total	100.00		
			0.04 (mg) Total	Wire Bond	% of Total Weight	0.2
				JGPSSI (D02)	100	
				7440-57-5	100	
			Total	100.00		
			0.28 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
				Tin	100.00	
				7440-31-5	100.00	
			Total	100.00		
			22.200			100.000

Various Assembly Sites / Material compilation 0.0222 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: MF 8 (Lead) DFN 3x3 mm (A7 / AJ)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			17.72 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			60676-86-0	85.00
			Trade Secret	8.00
			Trade Secret	5.50
			JGPSSI (B08)	40039-93-8
			JGPSSI (A01)	1309-64-4
			1333-86-4	0.30
			Total	100.00
			2.33 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			JGPSSI (D01)	7440-50-8
			7439-89-6	2.35
			JGPSSI (D04)	7440-22-4
			7440-66-6	0.13
			Part of Alloy	7723-14-0
			Total	100.00
			0.17 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			JGPSSI (D04)	7440-22-4
			14808-60-7	26
			13561-08-5	16
			54208-63-8	14
			827-43-0	5
			Total	100.00
			1.67 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			Silicon	7440-21-3
				100
			Total	100.00
			0.04 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			JGPSSI (D02)	7440-57-5
				100
			Total	100.00
			0.28 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			Tin	7440-31-5
				100.00
			Total	100.00
			22.200	100.000

Various Assembly Sites / Material compilation 0.0222 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: MF 8 (Lead) DFN 3x3 mm (A7 / AJ)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			17.72 (mg) Total	Mold Compound	% of Total Weight	79.8
				60676-86-0	86.20	
				Trade Secret	3.00	
				Trade Secret	3.00	
				Trade Secret	3.00	
				Trade Secret	3.00	
				Trade Secret	1.50	
				1333-86-4	0.30	
			Total			100.00
			2.33 (mg) Total	Lead Frame	% of Total Weight	10.5
				JGPSSI (D01)	95.54	
				7439-89-6	2.35	
				JGPSSI (D04)	1.91	
				7440-66-6	0.13	
				Part of Alloy	0.08	
			Total			100.00
			0.17 (mg) Total	Die Attach	% of Total Weight	0.75
				JGPSSI (D04)	82	
				Trade Secret	9	
				Trade Secret	5	
				Trade Secret	5	
			Total			100.00
			1.67 Total (mg)	Chip (Die)	% of Total Weight	7.5
				Silicon	100	
				7440-21-3	100	
			Total			100.00
			0.04 (mg) Total	Wire Bond	% of Total Weight	0.2
				JGPSSI (D02)	100	
				7440-57-5	100	
			Total			100.00
			0.28 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
				Tin	100.00	
				7440-31-5	100.00	
			Total			100.00
Various Assembly Sites / Material compilation			0.0222 g Total Mass			
TOTALS:			100.000	22.200	1,000,000	
			22.200			100.000

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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			56.66 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			Total	100.00
			7.46 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			Total	100.00
			0.53 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			Total	100.00
			5.33 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			Total	100.00
			0.14 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			Total	100.00
			0.89 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			Total	100.00
			71.000	100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	68.788	48.839	687.876
Copper	7440-50-8	Lead Frame	10.031	7.122	100.314
Silicon	7440-21-3	Chip (Die)	7.500	5.325	75.000
Epoxy Resin A	Trade Secret	Mold Compound	2.394	1.700	23,940
Epoxy Resin B	Trade Secret	Mold Compound	2.394	1.700	23,940
Phenolic Resin A	Trade Secret	Mold Compound	2.394	1.700	23,940
Phenolic Resin B	Trade Secret	Mold Compound	2.394	1.700	23,940
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.888	12,500
Metal Hydroxide (an inorganic flame retardant - likely magnesium or aluminum)	Trade Secret	Mold Compound	1.197	0.850	11,970
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.352	4,954
Iron	7439-89-6	Lead Frame	0.247	0.175	2,468
Carbon Black	1333-86-4	Mold Compound	0.239	0.170	2,394
Gold	7440-57-5	Wire Bond	0.200	0.142	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.140	1,969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.083	1,163
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.072	1,020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.028	394
Zinc	7440-66-6	Lead Frame	0.013	0.009	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.006	87
TOTALS:			100.000	71.000	1,000,000

Various Assembly Sites / Material compilation 0.0710 g Total Mass

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	56.66 (mg) Total	Mold Compound	% of Total Weight	79.8		
Silica, fused	60676-86-0	Mold Compound	68.788	48.839	687,876	20	60676-86-0	86.20			
Copper	7440-50-8	Lead Frame	10.031	7.122	100,314		Trade Secret	3.00			
Silicon	7440-21-3	Chip (Die)	7.500	5.325	75,000		Trade Secret	3.00			
Epoxy Resin A	Trade Secret	Mold Compound	2.394	1.700	23,940		Trade Secret	3.00			
Epoxy Resin B	Trade Secret	Mold Compound	2.394	1.700	23,940		Trade Secret	3.00			
Phenolic Resin A	Trade Secret	Mold Compound	2.394	1.700	23,940		Trade Secret	1.50			
Phenolic Resin B	Trade Secret	Mold Compound	2.394	1.700	23,940		1333-86-4	0.30			
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.888	12,500		Total 100.00				
Metal Hydroxide (an inorganic flame retardant - likely magnesium or aluminum)	Trade Secret	Mold Compound	1.197	0.850	11,970		7.46 (mg) Total	Lead Frame		% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.815	0.579	8,150		10	JGPSSI (D01)		7440-50-8	95.54
Iron	7439-89-6	Lead Frame	0.247	0.175	2,468	7439-89-6		2.35			
Carbon Black	1333-86-4	Mold Compound	0.239	0.170	2,394	JGPSSI (D04)		7440-22-4	1.91		
Gold	7440-57-5	Wire Bond	0.200	0.142	2,000	7440-66-6		0.13			
Diester Resin	Trade Secret	Die Attach	0.064	0.045	638	Part of Alloy		7723-14-0	0.08		
Functionalized Urethane Resin	Trade Secret	Die Attach	0.038	0.027	375	Total 100.00					
Epoxy Resin	Trade Secret	Die Attach	0.034	0.024	338	0.53 (mg) Total	Die Attach	% of Total Weight	0.75		
Zinc	7440-66-6	Lead Frame	0.013	0.009	131	12	JGPSSI (D04)	7440-22-4	82		
Phosphorous	7723-14-0	Lead Frame	0.009	0.006	87		Trade Secret	9			
							Trade Secret	5			
							Trade Secret	5			
						Total 100.00					
Various Assembly Sites / Material compilation 0.0710 g Total Mass						5.33 Total (mg)	Chip (Die)	% of Total Weight	7.5		
						Silicon	7440-21-3	100	Total 100.00		
						0.14 (mg) Total	Wire Bond	% of Total Weight	0.2		
						JGPSSI (D02)	7440-57-5	100	Total 100.00		
						0.89 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
						Tin	7440-31-5	100.00	Total 100.00		
						71.000				100.000	

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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			19.79 (mg) Total	Mold Compound	% of Total Weight	79.8
				7631-86-9	71.84	
				9003-35-4	12.02	
				37382-79-9	12.02	
				JGPSSI (A01)	2.53	
				1309-64-4	2.53	
				JGPSSI (B08)	1.30	
				40039-93-8	1.30	
				1333-86-4	0.30	
				Total	100.00	
			2.60 (mg) Total	Lead Frame	% of Total Weight	10.5
				JGPSSI (D01)	95.54	
				7440-50-8	2.35	
				7439-89-6	2.35	
				JGPSSI (D04)	1.91	
				7440-22-4	1.91	
				7440-66-6	0.13	
				Part of Alloy	0.08	
				7723-14-0	0.08	
				Total	100.00	
			0.19 (mg) Total	Die Attach	% of Total Weight	0.75
				JGPSSI (D04)	39	
				7440-22-4	39	
				14808-60-7	26	
				13561-08-5	16	
				54208-63-8	14	
				827-43-0	5	
				Total	100.00	
			1.86 Total (mg)	Chip (Die)	% of Total Weight	7.5
				Silicon	100	
				7440-21-3	100	
				Total	100.00	
			0.05 (mg) Total	Wire Bond	% of Total Weight	0.2
				JGPSSI (D02)	100	
				7440-57-5	100	
				Total	100.00	
			0.31 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
				Tin	100.00	
				7440-31-5	100.00	
				Total	100.00	
Various Assembly Sites / Material compilation			0.0248 g Total Mass			
TOTALS:			100.000	24.800	1,000,000	

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data

Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports

JGPSSI = Japan Green Procurement Survey Standardization Initiative



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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			19.79 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			Total 100.00	
			2.60 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			Total 100.00	
			0.19 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			Total 100.00	
			1.86 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			Total 100.00	
			0.05 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			Total 100.00	
			0.31 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			Total 100.00	
			24.800	100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	60.010	14.882	600,096
Copper	7440-50-8	Lead Frame	10.031	2.488	100,314
Silicon	7440-21-3	Chip (Die)	7.500	1.860	75,000
Phenol-formaldehyde resin	9003-35-4	Mold Compound	5.187	1.286	51,870
Epoxy resin, multifunctional	129915-35-1	Mold Compound	5.187	1.286	51,870
Silicone modified epoxy resin	218163-11-2	Mold Compound	4.389	1.088	43,890
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	2.394	0.594	23,940
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	0.594	23,940
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.310	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.123	4,954
Iron	7439-89-6	Lead Frame	0.247	0.061	2,468
Carbon Black	1333-86-4	Mold Compound	0.239	0.059	2,394
Gold	7440-57-5	Wire Bond	0.200	0.050	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.049	1,969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.029	1,163
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.025	1,020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.010	394
Zinc	7440-66-6	Lead Frame	0.013	0.003	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87
TOTALS:			100.000	24.800	1,000,000

Various Assembly Sites / Material compilation 0.0248 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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JGPSSI = Japan Green Procurement Survey Standardization Initiative



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

Termination Base Alloy : Copper Alloy (Cu)						RSRC 2	RSRC 5	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	384.48 (mg) Total		Mold Compound	% of Total Weight	79.8		
Silica, vitreous	60676-86-0	Mold Compound	67.830	326.805	678,300	13		60676-86-0	85.00			
Copper	7440-50-8	Lead Frame	9.869	47.551	98,695			Trade Secret	6.13			
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.576	36.502	75,761			Trade Secret	6.13			
Epoxy Resin	Trade Secret	Mold Compound	4.888	23.549	48,878			29690-82-2	2.45			
Phenolic Resin	Trade Secret	Mold Compound	4.888	23.549	48,878			1333-86-4	0.30			
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	9.420	19,551			Total			100.00	
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	6.023	12,500	50.59 (mg) Total		Lead Frame	% of Total Weight	10.5		
Silver	7440-22-4	Lead Frame + Die Attach	0.495	2.387	4,954	11		JGPSSI (D01)	7440-50-8	94.00		
Nickel	7440-02-0	Lead Frame	0.336	1.619	3,360			Alloy-non-skin contact	7440-02-0	3.20		
Carbon Black	1333-86-4	Mold Compound	0.239	1.153	2,394			JGPSSI (D04)	7440-22-4	1.91		
Gold	7440-57-5	Wire Bond	0.200	0.964	2,000				7440-21-3	0.73		
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.949	1,969			JGPSSI (A16)	7439-95-4	0.18		
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.560	1,163			Total		100.00		
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.492	1,020	3.61 (mg) Total		Die Attach	% of Total Weight	0.75		
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.190	394	10		JGPSSI (D04)	7440-22-4	39		
Magnesium	7439-95-4	Lead Frame	0.018	0.089	184				14808-60-7	26		
TOTALS: 100.000 481.800 1,000,000										13561-08-5	16	
Various Assembly Sites / Material compilation 0.4818 g Total Mass										54208-63-8	14	
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).										827-43-0	5	
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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.								36.14 Total (mg)		Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data									7440-21-3	100		
JGPSSI = Japan Green Procurement Survey Standardization Initiative								Total		100.00		
Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports								0.96 (mg) Total		Wire Bond	% of Total Weight	0.2
MICROCHIP www.microchip.com								JGPSSI (D02)	7440-57-5	100		
Microchip Technology Inc. 2355 W. Chandler Blvd. Chandler, AZ 85224-6199 USA (480) 792-7200 FAX (480) 792-7277								Total		100.00		
								6.02 (mg) Total		Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
									7440-31-5	100.00		
								Total		100.00		
								481.800		100.000		



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

Termination Base Alloy : Copper Alloy (Cu)						Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3		
RSRC 2						RSRC 5					
						384.48 (mg) Total		Mold Compound	% of Total Weight	79.8	
								60676-86-0	85.00		
								Trade Secret	8.70		
								Trade Secret	6.00		
								1333-86-4	0.30		
								Total	100.00		
						50.59 (mg) Total		Lead Frame	% of Total Weight	10.5	
								JGPSSI (D01)	7440-50-8	94.00	
								Alloy-non-skin contact	7440-02-0	3.20	
								JGPSSI (D04)	7440-22-4	1.91	
								7440-21-3	0.73		
								JGPSSI (A16)	7439-95-4	0.18	
								Total	100.00		
						3.61 (mg) Total		Die Attach	% of Total Weight	0.75	
								JGPSSI (D04)	7440-22-4	39	
								14808-60-7	26		
								13561-08-5	16		
								54208-63-8	14		
								827-43-0	5		
								Total	100.00		
						36.14 Total (mg)		Chip (Die)	% of Total Weight	7.5	
								7440-21-3	100		
								Total	100.00		
						0.96 (mg) Total		Wire Bond	% of Total Weight	0.2	
								JGPSSI (D02)	7440-57-5	100	
								Total	100.00		
						6.02 (mg) Total		Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
								7440-31-5	100.00		
								Total	100.00		
TOTALS:						100.000		481.800		1,000,000	
Various Assembly Sites / Material compilation						0.4818 g Total Mass					

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: PQ 64 (Lead) MQFP 14x14x2.7 mm (V5)

			Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			925.84 (mg) Total	Mold Compound	% of Total Weight	79.8	
13			60676-86-0	85.00			
			Trade Secret	6.13			
			Trade Secret	6.13			
			29690-82-2	2.45			
			1333-86-4	0.30			
			Total	100.00			
			121.82 (mg) Total	Lead Frame	% of Total Weight	10.5	
11			JGPSSI (D01)	94.00			
			Alloy-non-skin contact	3.20			
			JGPSSI (D04)	1.91			
			7440-21-3	0.73			
			JGPSSI (A16)	0.18			
			Total	100.00			
			8.70 (mg) Total	Die Attach	% of Total Weight	0.75	
10			JGPSSI (D04)	39			
			14808-60-7	26			
			13561-08-5	16			
			54208-63-8	14			
			827-43-0	5			
			Total	100.00			
			87.02 Total (mg)	Chip (Die)	% of Total Weight	7.5	
			7440-21-3	100			
			Total	100.00			
			2.32 (mg) Total	Wire Bond	% of Total Weight	0.2	
			JGPSSI (D02)	100			
			Total	100.00			
			14.50 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
			7440-31-5	100.00			
			Total	100.00			
			1,160.200				100.000

Various Assembly Sites / Material compilation 1.1602 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: PQ 64 (Lead) MQFP 14x14x2.7 mm (V5)

Termination Base Alloy : Copper Alloy (Cu)						Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
RSRC 2						RSRC 5				
						925.84 (mg) Total		Mold Compound	% of Total Weight	79.8
						60676-86-0		85.00		
						Trade Secret		8.70		
						Trade Secret		6.00		
						1333-86-4		0.30		
						Total		100.00		
						121.82 (mg) Total		Lead Frame	% of Total Weight	10.5
						JGPSSI (D01)		7440-50-8	94.00	
						Alloy-non-skin contact		7440-02-0	3.20	
						JGPSSI (D04)		7440-22-4	1.91	
						7440-21-3		0.73		
						JGPSSI (A16)		7439-95-4	0.18	
						Total		100.00		
						8.70 (mg) Total		Die Attach	% of Total Weight	0.75
						JGPSSI (D04)		7440-22-4	39	
						14808-60-7		26		
						13561-08-5		16		
						54208-63-8		14		
						827-43-0		5		
						Total		100.00		
						87.02 Total (mg)		Chip (Die)	% of Total Weight	7.5
						7440-21-3		100		
						Total		100.00		
						2.32 (mg) Total		Wire Bond	% of Total Weight	0.2
						JGPSSI (D02)		7440-57-5	100	
						Total		100.00		
						14.50 (mg) Total		Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
						7440-31-5		100.00		
						Total		100.00		
TOTALS:						1,160.200		1,160.200		1,000,000
Various Assembly Sites / Material compilation						1.1602 g Total Mass				

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			20.43 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			Total 100.00	
			2.69 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			Total 100.00	
			0.19 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			Total 100.00	
			1.92 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			Total 100.00	
			0.05 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			Total 100.00	
			0.32 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			Total 100.00	
TOTALS:			25.600	100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	2.455	95,886
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.005	188
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	14.675	573,246
Gold	7440-57-5	Wire Bond	0.200	0.051	2,000
Copper	7440-50-8	Lead Frame	9.869	2.527	98,695
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.320	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.815	0.209	8,150
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.576	1.939	75,761
Nickel	7440-02-0	Lead Frame	0.336	0.086	3,360
Magnesium	7439-95-4	Lead Frame	0.018	0.005	184
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.041	0.011	413
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	0.266	10,374
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	2.455	95,886
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.075	0.019	750
Carbon Black	1333-86-4	Mold Compound	0.239	0.061	2,394
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	0.517	20,214

Various Assembly Sites / Material compilation 0.0256 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	20.43 (mg) Total	Mold Compound	% of Total Weight	79.8		
Silica, vitreous	60676-86-0	Mold Compound	63.202	16.180	632,016	14	60676-86-0	79.20			
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314		29690-82-2	10.00			
Epoxy, cresol novolac	29690-82-2	Mold Compound	7.980	2.043	79,800		9003-35-4	5.00			
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75,000		JGPSSI (A01)	3.00			
Phenol-formaldehyde resin	9003-35-4	Mold Compound	3.990	1.021	39,900		JGPSSI (B08)	2.50			
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	0.613	23,940		1333-86-4	0.30			
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	1.995	0.511	19,950		Total 100.00				
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.320	12,500		2.69 (mg) Total	Lead Frame		% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.127	4,954		10	JGPSSI (D01)		95.54	
Iron	7439-89-6	Lead Frame	0.247	0.063	2,468			7439-89-6		2.35	
Carbon Black	1333-86-4	Mold Compound	0.239	0.061	2,394	JGPSSI (D04)		1.91			
Gold	7440-57-5	Wire Bond	0.200	0.051	2,000	7440-66-6		0.13			
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.050	1,969	Part of Alloy		0.08			
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.030	1,163	Total 100.00					
2,2'-(methylenebis(o-phenylenoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.026	1,020	0.19 (mg) Total	Die Attach	% of Total Weight	0.75		
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.010	394	10	JGPSSI (D04)	39			
Zinc	7440-66-6	Lead Frame	0.013	0.003	131		14808-60-7	26			
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87		13561-08-5	16			
TOTALS:								54208-63-8		14	
Various Assembly Sites / Material compilation 0.0256 g Total Mass								827-43-0		5	
							Total 100.00				
						1.92 Total (mg)	Chip (Die)	% of Total Weight	7.5		
							7440-21-3	100			
							Total 100.00				
						0.05 (mg) Total	Wire Bond	% of Total Weight	0.2		
							JGPSSI (D02)	100			
							Total 100.00				
						0.32 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
							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) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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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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JGPSSI = Japan Green Procurement Survey Standardization Initiative



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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			20.43 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			7631-86-9	71.84
			9003-35-4	12.02
			37382-79-9	12.02
			JGPSSI (A01)	2.53
			JGPSSI (B08)	1.30
			1309-64-4	0.30
			1333-86-4	0.30
			Total	100.00
			2.69 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			JGPSSI (D01)	95.54
			7440-50-8	2.35
			7439-89-6	1.91
			7440-22-4	0.13
			7440-66-6	0.13
			Part of Alloy	0.08
			7723-14-0	0.08
			Total	100.00
			0.19 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			JGPSSI (D04)	82
			7440-22-4	10
			13561-08-5	6
			54208-63-8	3
			827-43-0	3
			Total	100.00
			1.92 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			7440-21-3	100
			Total	100.00
			0.05 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			JGPSSI (D02)	100
			7440-57-5	100
			Total	100.00
			0.32 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			7440-31-5	100.00
			Total	100.00
			25.600	100.000

Various Assembly Sites / Material compilation 0.0256 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	20.59 (mg) Total	Mold Compound	% of Total Weight	79.8	
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	14.790	573,246	10	7631-86-9	71.84		
Copper	7440-50-8	Lead Frame	10.031	2.588	100,314		9003-35-4	12.02		
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	2.474	95,886		37382-79-9	12.02		
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	2.474	95,886		JGPSSI (A01)	2.53		
Silicon	7440-21-3	Chip (Die)	7.500	1.935	75,000		JGPSSI (B08)	1.30		
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	0.522	20,214		1333-86-4	0.30		
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.323	12,500		Total			100.00
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	0.268	10,374		2.71 (mg) Total			10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.128	4,954		JGPSSI (D01)	95.54		10
Iron	7439-89-6	Lead Frame	0.247	0.064	2,468		7439-89-6	2.35		
Carbon Black	1333-86-4	Mold Compound	0.239	0.062	2,394	JGPSSI (D04)	1.91			
Gold	7440-57-5	Wire Bond	0.200	0.052	2,000	7440-66-6	0.13			
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.051	1,969	Part of Alloy	0.08			
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.030	1,163	Total		100.00		
2,2'-(methylenebis(o-phenyleneoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.026	1,020	0.19 (mg) Total		0.75		
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.010	394	JGPSSI (D04)	39	10		
Zinc	7440-66-6	Lead Frame	0.013	0.003	131	14808-60-7	26			
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87	13561-08-5	16			
TOTALS:						100.000	25.800		1,000,000	
Various Assembly Sites / Material compilation						0.0258 g Total Mass				
						1.94 Total (mg)		Chip (Die)	% of Total Weight	7.5
								7440-21-3	100	
								Total		100.00
						0.05 (mg) Total		Wire Bond	% of Total Weight	0.2
						JGPSSI (D02)		7440-57-5	100	
								Total		100.00
						0.32 (mg) Total		Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
								7440-31-5	100.00	
								Total		100.00
						25.800				100.000

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			20.59 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			Total 100.00	
			2.71 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			Total 100.00	
			0.19 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			Total 100.00	
			1.94 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			Total 100.00	
			0.05 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			Total 100.00	
			0.32 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			Total 100.00	
TOTALS:			25.800	100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Phenol-formaldehyde resin	9003-35-4	Mold Compound	5.187	1.338	51,870
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.010	394
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87
Zinc	7440-66-6	Lead Frame	0.013	0.003	131
Gold	7440-57-5	Wire Bond	0.200	0.052	2,000
Copper	7440-50-8	Lead Frame	10.031	2.588	100,314
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.323	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.128	4,954
Silicon	7440-21-3	Chip (Die)	7.500	1.935	75,000
Iron	7439-89-6	Lead Frame	0.247	0.064	2,468
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	2.394	0.618	23,940
Silica, vitreous	60676-86-0	Mold Compound	60.010	15.482	600,096
2,2'-(methylenebis(o-phenyleneoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.026	1,020
Silicone modified epoxy resin	218163-11-2	Mold Compound	4.389	1.132	43,890
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.051	1,969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.030	1,163
Carbon Black	1333-86-4	Mold Compound	0.239	0.062	2,394
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	0.618	23,940
Epoxy resin, multifunctional	129915-35-1	Mold Compound	5.187	1.338	51,870

Various Assembly Sites / Material compilation 0.0258 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: P and PA 8 (Lead) PDIP (Small Outline - .300") (C)4 / CK

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	388.39 (mg) Total	Mold Compound	% of Total Weight	79.8				
Silica, vitreous	60676-86-0	Mold Compound	63.202	307.602	632,016	14	60676-86-0	79.20	100.00				
Copper	7440-50-8	Lead Frame	10.031	48.823	100,314		29690-82-2	10.00					
Epoxy, cresol novolac	29690-82-2	Mold Compound	7.980	38.839	79,800		9003-35-4	5.00					
Silicon	7440-21-3	Chip (Die)	7.500	36.503	75,000		JGPSSI (A01)	3.00					
Phenol-formaldehyde resin	9003-35-4	Mold Compound	3.990	19.419	39,900		JGPSSI (B08)	2.50					
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	11.652	23,940		1333-86-4	0.30					
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	1.995	9.710	19,950		Total			100.00			
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	6.084	12,500		51.10 (mg) Total	Lead Frame		% of Total Weight	10.5		
Silver	7440-22-4	Lead Frame	0.495	2.411	4,954		10	JGPSSI (D01)		95.54	100.00		
Iron	7439-89-6	Lead Frame	0.247	1.201	2,468			7439-89-6		2.35			
Carbon Black	1333-86-4	Mold Compound	0.239	1.165	2,394	JGPSSI (D04)		1.91					
Gold	7440-57-5	Wire Bond	0.200	0.973	2,000	7440-66-6		0.13					
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.958	1,969	Part of Alloy		0.08					
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.566	1,163	Total		100.00					
2,2'-(methylenebis(o-phenyleneoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.497	1,020	3.65 (mg) Total	Die Attach	% of Total Weight	0.75				
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.192	394	10	JGPSSI (D04)	39	100.00				
Zinc	7440-66-6	Lead Frame	0.013	0.064	131		14808-60-7	26					
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87		13561-08-5	16					
							54208-63-8	14					
							827-43-0	5					
TOTALS:						100.000	486.700	1,000,000					
Various Assembly Sites / Material compilation			0.4867 g Total Mass										
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).						36.50 Total (mg)					Chip (Die)	% of Total Weight	7.5
Microchip's corporate Certificate of RoHS Compliance for all of its Pb-free semiconductor devices is published on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Certificate of RoHS Compliance											7440-21-3	100	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						Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports							
JGPSSI = Japan Green Procurement Survey Standardization Initiative						0.97 (mg) Total					Wire Bond	% of Total Weight	0.2
						JGPSSI (D02)					7440-57-5	100	100.00
						6.08 (mg) Total					Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
											7440-31-5	100.00	100.00
						486.700					100.000		



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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	388.39 (mg) Total	Mold Compound	% of Total Weight	79.8		
Silica, vitreous	60676-86-0	Mold Compound	53.626	260.996	536.256	11	60676-86-0	67.20			
Formaldehyde, polymer with (chloromethyl)oxirane and 2-methylphenol	29690-82-2	Mold Compound	15.960	77.677	159.600		29690-82-2	20.00			
Copper	7440-50-8	Lead Frame	10.031	48.823	100.314		9003-35-4	7.50			
Silicon	7440-21-3	Chip (Die)	7.500	36.503	75.000		JGPSSI (A01)	3.00			
Phenol-formaldehyde resin	9003-35-4	Mold Compound	5.985	29.129	59.850		JGPSSI (B08)	2.00			
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	11.652	23.940		40039-93-8	2.00			
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.596	7.768	15.960		1333-86-4	0.30			
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	6.084	12.500		Total 100.00				
Silver	7440-22-4	Lead Frame + Die Attach	0.495	2.411	4.954		51.10 (mg) Total	Lead Frame		% of Total Weight	10.5
Iron	7439-89-6	Lead Frame	0.247	1.201	2.468		JGPSSI (D01)	7440-50-8		95.54	10
Carbon Black	1333-86-4	Mold Compound	0.239	1.165	2.394		7439-89-6	2.35			
Gold	7440-57-5	Wire Bond	0.200	0.973	2.000	JGPSSI (D04)	7440-22-4	1.91			
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.958	1.969	7440-66-6	0.13				
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.566	1.163	Part of Alloy	7723-14-0	0.08			
2,2'-(methylenebis(o-phenyleneoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.497	1.020	Total 100.00					
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.192	394	3.65 (mg) Total	Die Attach	% of Total Weight	0.75		
Zinc	7440-66-6	Lead Frame	0.013	0.064	131	JGPSSI (D04)	7440-22-4	39	10		
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87	14808-60-7	26				
TOTALS: 100.000 486.700 1,000,000						13561-08-5	16				
Various Assembly Sites / Material compilation 0.4867 g Total Mass						54208-63-8	14				
						827-43-0	5				
						Total 100.00					
						36.50 Total (mg)	Chip (Die)	% of Total Weight	7.5		
							7440-21-3	100	100.00		
						Total 100.00					
						0.97 (mg) Total	Wire Bond	% of Total Weight	0.2		
						JGPSSI (D02)	7440-57-5	100	100.00		
						Total 100.00					
						6.08 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
							7440-31-5	100.00	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) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: P and PA 14 (Lead) PDIP (Small Outline - .300") (D2 / DF)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3																														
				14	<table border="1"> <thead> <tr> <th>760.73 (mg) Total</th> <th>Mold Compound</th> <th>% of Total Weight</th> <th>79.8</th> </tr> </thead> <tbody> <tr> <td></td> <td>60676-86-0</td> <td>79.20</td> <td></td> </tr> <tr> <td></td> <td>29690-82-2</td> <td>10.00</td> <td></td> </tr> <tr> <td></td> <td>9003-35-4</td> <td>5.00</td> <td></td> </tr> <tr> <td></td> <td>JGPSSI (A01)</td> <td>3.00</td> <td></td> </tr> <tr> <td></td> <td>JGPSSI (B08)</td> <td>2.50</td> <td></td> </tr> <tr> <td></td> <td>1333-86-4</td> <td>0.30</td> <td></td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> <td></td> </tr> </tbody> </table>			760.73 (mg) Total	Mold Compound	% of Total Weight	79.8		60676-86-0	79.20			29690-82-2	10.00			9003-35-4	5.00			JGPSSI (A01)	3.00			JGPSSI (B08)	2.50			1333-86-4	0.30		Total		100.00		
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	7440-31-5	100.00																																						
Total		100.00																																						
TOTALS:				100.000	953.300	1,000,000	953.300			100.000																														
Various Assembly Sites / Material compilation				0.9533 g Total Mass																																				

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Microchip Technology Inc. 2355 W. Chandler Blvd. Chandler, AZ 85224-6199 USA (480) 792-7200 FAX (480) 792-7277



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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
				% Total Weight	mg/part	ppm	787.39 (mg) Total	Mold Compound	% of Total Weight	79.8
14	Phenol-formaldehyde resin	9003-35-4	Mold Compound	3.990	39.369	39,900		60676-86-0	79.20	
	4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.185	188		29690-82-2	10.00	
	Phosphorous	7723-14-0	Lead Frame	0.009	0.085	87		9003-35-4	5.00	
	Zinc	7440-66-6	Lead Frame	0.013	0.130	131		JGPSSI (A01)	1309-64-4	3.00
	Gold	7440-57-5	Wire Bond	0.200	1.973	2,000		JGPSSI (B08)	68541-56-0	2.50
	Copper	7440-50-8	Lead Frame	10.031	98.980	100,314			1333-86-4	0.30
	Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	12.334	12,500				
	Silver	7440-22-4	Lead Frame + Die Attach	0.815	8.042	8,150				
	Silicon	7440-21-3	Chip (Die)	7.500	74.003	75,000				
	Iron	7439-89-6	Lead Frame	0.247	2.435	2,468				
	Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	1.995	19.685	19,950				
	Silica, vitreous	60676-86-0	Mold Compound	63.202	623.610	632,016				
	2,2'-(methylenebis(o-phenyleneoxymethylene))bisoxirane	54208-63-8	Die Attach	0.041	0.407	413				
	Epoxy, cresol novolac	29690-82-2	Mold Compound	7.980	78.739	79,800				
	2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.075	0.740	750				
	Carbon Black	1333-86-4	Mold Compound	0.239	2.362	2,394				
	Diantimony Trioxide	1309-64-4	Mold Compound	2.394	23.622	23,940				
TOTALS:				100.000	986.700	1,000,000				
Various Assembly Sites / Material compilation				0.9867 g Total Mass						
							103.60 (mg) Total	Lead Frame	% of Total Weight	10.5
10	JGPSSI (D01)	7440-50-8	Lead Frame	95.54						
	JGPSSI (D04)	7439-89-6	Lead Frame	2.35						
	JGPSSI (D04)	7440-22-4	Lead Frame	1.91						
	Part of Alloy	7440-66-6	Lead Frame	0.13						
		7723-14-0	Lead Frame	0.08						
							Total	100.00		
							7.40 (mg) Total	Die Attach	% of Total Weight	0.75
11	JGPSSI (D04)	7440-22-4	Die Attach	82						
		13561-08-5	Die Attach	10						
		54208-63-8	Die Attach	6						
		827-43-0	Die Attach	3						
							Total	100.00		
							74.00 (mg)	Chip (Die)	% of Total Weight	7.5
								7440-21-3	100	
							Total	100.00		
							1.97 (mg) Total	Wire Bond	% of Total Weight	0.2
							JGPSSI (D02)	7440-57-5	100	
							Total	100.00		
							12.33 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
								7440-31-5	100.00	
							Total	100.00		
							986.700			100.000

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
				787.39	(mg) Total	Mold Compound	% of Total Weight	79.8		
				60676-86-0			67.20			
				29690-82-2			20.00			
				7440-50-8			7.50			
				7440-21-3			3.00			
				9003-35-4			2.00			
				1309-64-4			0.30			
				40039-93-8			0.00			
				1333-86-4			0.30			
				Total			100.00			
				103.60	(mg) Total	Lead Frame	% of Total Weight	10.5		
				7440-50-8			95.54			
				7439-89-6			2.35			
				7440-22-4			1.91			
				7440-66-6			0.13			
				7723-14-0			0.08			
				Total			100.00			
				7.40	(mg) Total	Die Attach	% of Total Weight	0.75		
				7440-22-4			39			
				14808-60-7			26			
				13561-08-5			16			
				54208-63-8			14			
				827-43-0			5			
				Total			100.00			
				74.00	Total (mg)	Chip (Die)	% of Total Weight	7.5		
				7440-21-3			100			
				Total			100.00			
				1.97	(mg) Total	Wire Bond	% of Total Weight	0.2		
				7440-57-5			100			
				Total			100.00			
				12.33	(mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
				7440-31-5			100.00			
				Total			100.00			
				986.700				100.00		

Various Assembly Sites / Material compilation 0.9867 g Total Mass

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Microchip Technology Inc. 2355 W. Chandler Blvd. Chandler, AZ 85224-6199 USA (480) 792-7200 FAX (480) 792-7277



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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
				995.90 (mg) Total	Mold Compound	% of Total Weight	79.8				
14	Silica, vitreous	60676-86-0	Mold Compound	63.202	788.756	632.016		60676-86-0	79.20		
	Copper	7440-50-8	Lead Frame	10.031	125.192	100.314		29690-82-2	10.00		
	Epoxy, cresol novolac	29690-82-2	Mold Compound	7.980	99.590	79.800		9003-35-4	5.00		
	Silicon	7440-21-3	Chip (Die)	7.500	93.600	75.000		JGPSSI (A01)	1309-64-4	3.00	
	Phenol-formaldehyde resin	9003-35-4	Mold Compound	3.990	49.795	39.900		JGPSSI (B08)	68541-56-0	2.50	
	Diantimony Trioxide	1309-64-4	Mold Compound	2.394	29.877	23.940			1333-86-4	0.30	
	Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	1.995	24.898	19.950		Total	100.00		
				131.04 (mg) Total	Lead Frame	% of Total Weight	10.5				
10	Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	15.600	12.500		JGPSSI (D01)	7440-50-8	95.54	
	Silver	7440-22-4	Lead Frame + Die Attach	0.815	10.172	8.150		7439-89-6	2.35		
	Iron	7439-89-6	Lead Frame	0.247	3.079	2.468		JGPSSI (D04)	7440-22-4	1.91	
	Carbon Black	1333-86-4	Mold Compound	0.239	2.988	2.394			7440-66-6	0.13	
	Gold	7440-57-5	Wire Bond	0.200	2.496	2.000		Part of Alloy	7723-14-0	0.08	
				Total	100.00						
				9.36 (mg) Total	Die Attach	% of Total Weight	0.75				
11	2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.075	0.936	750		JGPSSI (D04)	7440-22-4	82	
	2,2'-[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.041	0.515	413			13561-08-5	10	
	4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.234	188			54208-63-8	6	
	Zinc	7440-66-6	Lead Frame	0.013	0.164	131			827-43-0	3	
Phosphorous	7723-14-0	Lead Frame	0.009	0.108	87		Total	100.00			
TOTALS:				100.000	1,248.000	1,000,000					
Various Assembly Sites / Material compilation				1.2480 g Total Mass							
				93.60 Total (mg)	Chip (Die)	% of Total Weight	7.5				
					7440-21-3	100					
				Total	100.00						
				2.50 (mg) Total	Wire Bond	% of Total Weight	0.2				
				JGPSSI (D02)	7440-57-5	100					
				Total	100.00						
				15.60 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25				
					7440-31-5	100.00					
				Total	100.00						
				1,248.000					100.000		

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	995.90 (mg) Total	Mold Compound	% of Total Weight	79.8		
Silica, vitreous	60676-86-0	Mold Compound	53.626	669.247	536.256	11	60676-86-0	67.20			
Formaldehyde, polymer with (chloromethyl)oxirane and 2-methylphenol	29690-82-2	Mold Compound	15.960	199.181	159.600		29690-82-2	20.00			
Copper	7440-50-8	Lead Frame	10.031	125.192	100.314		9003-35-4	7.50			
Silicon	7440-21-3	Chip (Die)	7.500	93.600	75.000		JGPSSI (A01)	3.00			
Phenol-formaldehyde resin	9003-35-4	Mold Compound	5.985	74.693	59.850		JGPSSI (B08)	2.00			
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	29.877	23.940		40039-93-8	0.30			
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.596	19.918	15.960		1333-86-4	0.30			
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	15.600	12.500		Total 100.00				
Silver	7440-22-4	Lead Frame + Die Attach	0.495	6.183	4.954		131.04 (mg) Total	Lead Frame		% of Total Weight	10.5
Iron	7439-89-6	Lead Frame	0.247	3.079	2.468		JGPSSI (D01)	7440-50-8		95.54	10
Carbon Black	1333-86-4	Mold Compound	0.239	2.988	2.394		7439-89-6	2.35			
Gold	7440-57-5	Wire Bond	0.200	2.496	2.000	JGPSSI (D04)	7440-22-4	1.91			
Quartz (SiO2)	14808-60-7	Die Attach	0.197	2.458	1.969	7440-66-6	0.13				
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	1.451	1.163	Part of Alloy	7723-14-0	0.08			
2,2'-(methylenebis(o-phenyleneoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	1.273	1.020	Total 100.00					
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.492	394	9.36 (mg) Total	Die Attach	% of Total Weight	0.75		
Zinc	7440-66-6	Lead Frame	0.013	0.164	131	JGPSSI (D04)	7440-22-4	39	10		
Phosphorous	7723-14-0	Lead Frame	0.009	0.108	87	14808-60-7	26				
TOTALS:						100.000	1,248.000	1,000,000			
Various Assembly Sites / Material compilation						1.2480 g Total Mass					
						14808-60-7	16				
						54208-63-8	14				
						827-43-0	5				
						Total 100.00					
						93.60 Total (mg)	Chip (Die)	% of Total Weight	7.5		
						7440-21-3	100				
						Total 100.00					
						2.50 (mg) Total	Wire Bond	% of Total Weight	0.2		
						JGPSSI (D02)	7440-57-5	100			
						Total 100.00					
						15.60 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
						7440-31-5	100.00				
						Total 100.00					
						1,248.000			100.000		

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Semiconductor Device Type: PG 24 (Lead) PDIP Wide Outline - .600" (JA / JT)

Termination Base Alloy : Copper Alloy (Cu)				RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
				2888.76 (mg) Total	Mold Compound	% of Total Weight	79.8		
				60676-86-0	67.20				
				29690-82-2	20.00				
				9003-35-4	7.50				
				JGPSSI (A01)	3.00				
				JGPSSI (B08)	2.00				
				1333-86-4	0.30				
				Total	100.00				
				380.10 (mg) Total	Lead Frame	% of Total Weight	10.5		
				JGPSSI (D01)	95.54				
				7439-89-6	2.35				
				JGPSSI (D04)	1.91				
				7440-66-6	0.13				
				Part of Alloy	0.08				
				Total	100.00				
				27.15 (mg) Total	Die Attach	% of Total Weight	0.75		
				JGPSSI (D04)	82				
				13561-08-5	10				
				54208-63-8	6				
				827-43-0	3				
				Total	100.00				
				271.50 Total (mg)	Chip (Die)	% of Total Weight	7.5		
				7440-21-3	100				
				Total	100.00				
				7.24 (mg) Total	Wire Bond	% of Total Weight	0.2		
				JGPSSI (D02)	100				
				Total	100.00				
				45.25 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
				7440-31-5	100.00				
				Total	100.00				
				3,620.000			100.000		

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	53.626	1941.247	59,850
Formaldehyde, polymer with (chloromethyl)oxirane and 2-methylphenol	29690-82-2	Mold Compound	15.960	577.752	188
Copper	7440-50-8	Lead Frame	10.031	363.138	87
Silicon	7440-21-3	Chip (Die)	7.500	271.500	131
Phenol-formaldehyde resin	9003-35-4	Mold Compound	5.985	216.657	2,000
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	86.663	100,314
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.596	57.775	12,500
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	45.250	8,150
Silver	7440-22-4	Lead Frame + Die Attach	0.815	29.504	75,000
Iron	7439-89-6	Lead Frame	0.247	8.932	2,468
Carbon Black	1333-86-4	Mold Compound	0.239	8.666	536,256
Gold	7440-57-5	Wire Bond	0.200	7.240	413
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.075	2.715	15,960
2,2'-[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.041	1.493	159,600
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.679	750
Zinc	7440-66-6	Lead Frame	0.013	0.475	2,394
Phosphorous	7723-14-0	Lead Frame	0.009	0.314	23,940
TOTALS:			100.000	3,620.000	1,000,000

Various Assembly Sites / Material compilation 3.6200 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: P and PI 28 (Lead) PDIP (Wide Outline -.600") (Q2 / QB)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	3245.23 (mg) Total	Mold Compound	% of Total Weight	79.8		
Silica, vitreous	60676-86-0	Mold Compound	63.202	2570.219	632.016	14	60676-86-0	79.20			
Copper	7440-50-8	Lead Frame	10.031	407.948	100.314		29690-82-2	10.00			
Epoxy, cresol novolac	29690-82-2	Mold Compound	7.980	324.523	79.800		9003-35-4	5.00			
Silicon	7440-21-3	Chip (Die)	7.500	305.003	75.000		JGPSSI (A01)	3.00			
Phenol-formaldehyde resin	9003-35-4	Mold Compound	3.990	162.261	39.900		JGPSSI (B08)	2.50			
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	97.357	23.940		1333-86-4	0.30			
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	1.995	81.131	19.950		Total 100.00				
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	50.834	12.500		427.00 (mg) Total	Lead Frame		% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.495	20.147	4.954		10	JGPSSI (D01)		95.54	
Iron	7439-89-6	Lead Frame	0.247	10.035	2.468			7439-89-6		2.35	
Carbon Black	1333-86-4	Mold Compound	0.239	9.736	2.394	JGPSSI (D04)		1.91			
Gold	7440-57-5	Wire Bond	0.200	8.133	2.000	7440-66-6		0.13			
Quartz (SiO2)	14808-60-7	Die Attach	0.197	8.008	1.969	Part of Alloy		0.08			
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	4.728	1.163	Total 100.00					
2,2'-(methylenebis(o-phenyleneoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	4.149	1.020	30.50 (mg) Total	Die Attach	% of Total Weight	0.75		
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	1.602	394	11	JGPSSI (D04)	39			
Zinc	7440-66-6	Lead Frame	0.013	0.534	131		14808-60-7	26			
Phosphorous	7723-14-0	Lead Frame	0.009	0.352	87		13561-08-5	16			
TOTALS:							100.000	4,066.700		1,000,000	
Various Assembly Sites / Material compilation							4.0667 g Total Mass				
						305.00 Total (mg)	Chip (Die)	% of Total Weight	7.5		
							7440-21-3	100			
						Total 100.00					
						8.13 (mg) Total	Wire Bond	% of Total Weight	0.2		
						JGPSSI (D02)	7440-57-5	100			
						Total 100.00					
						50.83 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
							7440-31-5	100.00			
						Total 100.00					
						4,066.700				100.000	

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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			5187.00 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			Total 100.00	
			682.50 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			Total 100.00	
			48.75 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			Total 100.00	
			487.50 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			Total 100.00	
			13.00 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			Total 100.00	
			81.25 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			Total 100.00	
			6,500.000	100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	63.202	4108.104	632.016
Copper	7440-50-8	Lead Frame	10.031	652.043	100,314
Epoxy, cresol novolac	29690-82-2	Mold Compound	7.980	518.700	79,800
Silicon	7440-21-3	Chip (Die)	7.500	487.500	75,000
Phenol-formaldehyde resin	9003-35-4	Mold Compound	3.990	259.350	39,900
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	155.610	23,940
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	1.995	129.675	19,950
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	81.250	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.815	52.977	8,150
Iron	7439-89-6	Lead Frame	0.247	16.039	2,468
Carbon Black	1333-86-4	Mold Compound	0.239	15.561	2,394
Gold	7440-57-5	Wire Bond	0.200	13.000	2,000
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.075	4.875	750
2,2'-[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.041	2.681	413
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	1.219	188
Zinc	7440-66-6	Lead Frame	0.013	0.853	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.563	87
TOTALS:			100.000	6,500.000	1,000,000

Various Assembly Sites / Material compilation 6.5000 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			1665.83 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			60676-86-0	79.20
			29690-82-2	10.00
			9003-35-4	5.00
			JGPSSI (A01)	3.00
			JGPSSI (B08)	2.50
			68541-56-0	0.30
			1333-86-4	
			Total	100.00
			219.19 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			JGPSSI (D01)	95.54
			7439-89-6	2.35
			JGPSSI (D04)	1.91
			7440-22-4	1.91
			7440-66-6	0.13
			Part of Alloy	0.08
			7723-14-0	
			Total	100.00
			15.66 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			JGPSSI (D04)	39
			14808-60-7	26
			13561-08-5	16
			54208-63-8	14
			827-43-0	5
			Total	100.00
			156.56 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			7440-21-3	100
			Total	100.00
			4.18 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			JGPSSI (D02)	100
			7440-57-5	
			Total	100.00
			26.09 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			7440-31-5	100.00
			Total	100.00
			2,087.500	100.000

Various Assembly Sites / Material compilation 2.0875 g Total Mass

TOTALS: 100.000 2,087.500 1,000,000

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive). Microchip's corporate Certificate of RoHS Compliance for all of its Pb-free semiconductor devices is published on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Certificate of RoHS Compliance

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Semiconductor Device Type: L 28 (Lead) PLCC (L4)

Termination Base Alloy : Copper Alloy (Cu)				RSRC 2	RSRC 5	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	947.39 (mg) Total	Mold Compound	% of Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	805.278	678.300	13	60676-86-0	85.00	
Copper	7440-50-8	Lead Frame	10.289	122.150	102,890		Trade Secret	6.13	
Silicon	7440-21-3	Chip (Die)	7.500	89.040	75,000		Trade Secret	6.13	
Epoxy Resin	Trade Secret	Mold Compound	4.888	58.027	48,878		29690-82-2	2.45	
Phenolic Resin	Trade Secret	Mold Compound	4.888	58.027	48,878		1333-86-4	0.30	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	23.211	19,551		Total		
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	14.840	12,500	124.66 (mg) Total			10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.495	5.882	4,954	13	JGPSSI (D01)	7440-50-8	97.99
Carbon Black	1333-86-4	Mold Compound	0.239	2.842	2,394		JGPSSI (D04)	7440-22-4	1.91
Gold	7440-57-5	Wire Bond	0.200	2.374	2,000			7440-67-7	0.10
Quartz (SiO2)	14808-60-7	Die Attach	0.197	2.338	1,969			7439-96-5	0.01
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	1.380	1,163	Total			100.00
2,2'-[[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.102	1.211	1,020	8.90 (mg) Total			0.75
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.468	394	10	JGPSSI (D04)	7440-22-4	39
Zirconium	7440-67-7	Lead Frame	0.011	0.125	105			14808-60-7	26
Manganese	7439-96-5	Lead Frame	0.001	0.006	5			13561-08-5	16
								54208-63-8	14
TOTALS:									
Various Assembly Sites / Material compilation									
1,1872 g Total Mass									
						89.04 Total (mg)			7.5
						Chip (Die)			
						7440-21-3			100
						Total			100.00
						2.37 (mg) Total			0.2
						JGPSSI (D02)			
						7440-57-5			100
						Total			100.00
						14.84 (mg) Total			1.25
						Plating on external leads (pins) - 100% matte tin			
						7440-31-5			100.00
						Total			100.00
						1,187.200			100.000

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

Termination Base Alloy : Copper Alloy (Cu)				RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
				10	1968.43 (mg) Total	Mold Compound	% of Total Weight	79.8	
				13	259.00 (mg) Total	Lead Frame	% of Total Weight	10.5	
				10	18.50 (mg) Total	Die Attach	% of Total Weight	0.75	
				10	185.00 Total (mg)	Chip (Die)	% of Total Weight	7.5	
					4.93 (mg) Total	Wire Bond	% of Total Weight	0.2	
					30.83 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
TOTALS:				100.000	2,466.700	1,000.000		100.000	

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	1414.025	573.246
Copper	7440-50-8	Lead Frame	10.289	253.798	102.890
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	236.522	95.886
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	236.522	95.886
Silicon	7440-21-3	Chip (Die)	7.500	185.003	75.000
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	49.862	20.214
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	30.834	12.500
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	25.590	10.374
Silver	7440-22-4	Die Attach + Lead Frame	0.495	12.220	4.954
Carbon Black	1333-86-4	Mold Compound	0.239	5.905	2.394
Gold	7440-57-5	Wire Bond	0.200	4.933	2.000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	4.858	1.969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	2.868	1.163
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	2.517	1.020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.972	0.394
Zirconium	7440-67-7	Lead Frame	0.011	0.259	0.105
Manganese	7439-96-5	Lead Frame	0.001	0.013	0.005

Various Assembly Sites / Material compilation 2.4667 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

Termination Base Alloy : Copper Alloy (Cu)				RSRC 2	RSRC 5	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	3872.37 (mg) Total	Mold Compound	% of Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	67.830	3291.519	678.300	13	60676-86-0	85.00	
Copper	7440-50-8	Lead Frame	10.289	499.282	102.890		Trade Secret	6.13	
Silicon	7440-21-3	Chip (Die)	7.500	363.945	75.000		Trade Secret	6.13	
Epoxy Resin	Trade Secret	Mold Compound	4.888	237.183	48.878		29690-82-2	2.45	
Phenolic Resin	Trade Secret	Mold Compound	4.888	237.183	48.878		1333-86-4	0.30	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	94.873	19.551		Total	100.00	
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	60.658	12.500	509.52 (mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.495	24.041	4.954	13	JGPSSI (D01)	7440-50-8	97.99
Carbon Black	1333-86-4	Mold Compound	0.239	11.617	2,394		JGPSSI (D04)	7440-22-4	1.91
Gold	7440-57-5	Wire Bond	0.200	9.705	2,000			7440-67-7	0.10
Quartz (SiO2)	14808-60-7	Die Attach	0.197	9.556	1,969			7439-96-5	0.01
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	5.642	1,163		Total	100.00	
2,2'-[[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.102	4.951	1,020	36.39 (mg) Total	Die Attach	% of Total Weight	0.75
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	1.911	394	10	JGPSSI (D04)	7440-22-4	39
Zirconium	7440-67-7	Lead Frame	0.011	0.510	105			14808-60-7	26
Manganese	7439-96-5	Lead Frame	0.001	0.025	5			13561-08-5	16
								54208-63-8	14
TOTALS:						100.000	4,852.600	1,000,000	
Various Assembly Sites / Material compilation						4.8526 g Total Mass			
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).									
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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.									
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data						Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports			
JGPSSI = Japan Green Procurement Survey Standardization Initiative									
						363.95 Total (mg)			
						Chip (Die)			
						7440-21-3			
						100			
						Total			
						100.00			
						9.71 (mg) Total			
						Wire Bond			
						JGPSSI (D02)			
						7440-57-5			
						100			
						Total			
						100.00			
						60.66 (mg) Total			
						Plating on external leads (pins) - 100% matte tin			
						7440-31-5			
						100.00			
						Total			
						100.00			
						4,852.600			
						100.000			



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Semiconductor Device Type: L 84 (Lead) PLCC (B7)

Termination Base Alloy : Copper Alloy (Cu)				RSRC 2	RSRC 5	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	5655.83 (mg) Total	Mold Compound	% of Total Weight	79.8		
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	4062.879	573.246	10		7631-86-9	71.84		
Copper	7440-50-8	Lead Frame	10.289	729.229	102.890			9003-35-4	12.02		
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	679.593	95.886			37382-79-9	12.02		
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	679.593	95.886			JGPSSI (A01)	2.53		
Silicon	7440-21-3	Chip (Die)	7.500	531.563	75,000			JGPSSI (B08)	1.30		
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	143.268	20,214			1333-86-4	0.30		
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	88.594	12,500			Total	100.00		
3,5,3',5'-Tetrabromobisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	73.526	10,374			744.19 (mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.815	57.765	8,150		13	JGPSSI (D01)	7440-50-8	97.99	
Carbon Black	1333-86-4	Mold Compound	0.239	16.967	2,394				JGPSSI (D04)	7440-22-4	1.91
Gold	7440-57-5	Wire Bond	0.200	14.175	2,000				7440-67-7	0.10	
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.075	5.316	750				7439-96-5	0.01	
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.041	2.924	413		Total	100.00			
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	1.329	188		53.16 (mg) Total	Die Attach	% of Total Weight	0.75	
Zirconium	7440-67-7	Lead Frame	0.011	0.744	105	11	JGPSSI (D04)	7440-22-4	82		
Manganese	7439-96-5	Lead Frame	0.001	0.037	5				13561-08-5	10	
									54208-63-8	6	
								827-43-0	3		
							Total	100.00			
Various Assembly Sites / Material compilation						7.0875 g Total Mass					
TOTALS:						100.000	7,087.500	1,000,000			
							531.56 Total (mg)	Chip (Die)	% of Total Weight	7.5	
								7440-21-3	100		
							Total	100.00			
							14.18 (mg) Total	Wire Bond	% of Total Weight	0.2	
							JGPSSI (D02)	7440-57-5	100		
							Total	100.00			
							88.59 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
								7440-31-5	100.00		
							Total	100.00			
						7,087.500				100.000	

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Compliance with the above EU Directives has been verified via internal design controls, Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports

JGPSSI = Japan Green Procurement Survey Standardization Initiative



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Semiconductor Device Type: L 84 (Lead) PLCC (B7)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
				% Total Weight	mg/part	ppm	5655.83 (mg) Total	Mold Compound	% of Total Weight	79.8
Basic Substance	CAS Number	"Contained In" Sub-Component								
Silica, vitreous	60676-86-0	Mold Compound	67.830	4807.451	678.300	13		60676-86-0	85.00	
Copper	7440-50-8	Lead Frame	10.289	729.229	102.890			Trade Secret	6.13	
Silicon	7440-21-3	Chip (Die)	7.500	531.563	75.000			Trade Secret	6.13	
Epoxy Resin	Trade Secret	Mold Compound	4.888	346.419	48.878			29690-82-2	2.45	
Phenolic Resin	Trade Secret	Mold Compound	4.888	346.419	48.878			1333-86-4	0.30	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	138.568	19.551			Total	100.00	
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	88.594	12,500		744.19 (mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.815	57.765	8.150	13		JGPSSI (D01)	7440-50-8	97.99
Carbon Black	1333-86-4	Mold Compound	0.239	16.967	2,394			JGPSSI (D04)	7440-22-4	1.91
Gold	7440-57-5	Wire Bond	0.200	14.175	2,000				7440-67-7	0.10
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.075	5.316	750				7439-96-5	0.01
2,2'-(methylenebis(o-phenyleneoxymethylene))bisoxirane	54208-63-8	Die Attach	0.041	2.924	413			Total	100.00	
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	1.329	188		53.16 (mg) Total	Die Attach	% of Total Weight	0.75
Zirconium	7440-67-7	Lead Frame	0.011	0.744	105	11		JGPSSI (D04)	7440-22-4	82.00
Manganese	7439-96-5	Lead Frame	0.001	0.037	5				13561-08-5	10.00
TOTALS:			100.000	7,087.500	1,000,000				54208-63-8	5.50
									827-43-0	2.50
Various Assembly Sites / Material compilation			7.0875	g Total Mass				Total	100.00	
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).										
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Compliance with the above EU Directives has been verified via internal design controls, Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free supplier declarations, and /or analytical test data Information > Pb Free Links: Pb Free Laboratory Analytical Reports										
JGPSSI = Japan Green Procurement Survey Standardization Initiative										
							531.56 Total (mg)	Chip (Die)	% of Total Weight	7.5
								7440-21-3	100	
							Total	100.00		
							14.18 (mg) Total	Wire Bond	% of Total Weight	0.2
								JGPSSI (D02)	7440-57-5	100
							Total	100.00		
							88.59 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
								7440-31-5	100.00	
							Total	100.00		
							7,087.500			100.000



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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			35.67 (mg) Total	Mold Compound	% of Total Weight	79.8
				60676-86-0	90.00	
				Trade Secret	4.85	
				Trade Secret	4.85	
				1333-86-4	0.30	
			Total			100.00
			4.69 (mg) Total	Lead Frame	% of Total Weight	10.5
				JGPSSI (D01)	95.54	
				7439-89-6	2.35	
				JGPSSI (D04)	1.91	
				7440-66-6	0.13	
				Part of Alloy	0.08	
			Total			100.00
			0.34 (mg) Total	Die Attach	% of Total Weight	0.75
				JGPSSI (D04)	39	
				14808-60-7	26	
				13561-08-5	16	
				54208-63-8	14	
				827-43-0	5	
			Total			100.00
			3.35 Total (mg)	Chip (Die)	% of Total Weight	7.5
				7440-21-3	100	
			Total			100.00
			0.09 (mg) Total	Wire Bond	% of Total Weight	0.2
				JGPSSI (D02)	100	
			Total			100.00
			0.56 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
				7440-31-5	100.00	
			Total			100.00
			44.700			100.000

Various Assembly Sites / Material compilation 0.0447 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	68.79 (mg) Total	Mold Compound	% of Total Weight	79.8		
Silica, vitreous	60676-86-0	Mold Compound	67.830	58.469	678,300	19	60676-86-0	85.00			
Copper	7440-50-8	Lead Frame	10.031	8.647	100,314		Trade Secret	8.00			
Silicon	7440-21-3	Chip (Die)	7.500	6.465	75,000		Trade Secret	5.50			
Epoxy Resin	Trade Secret	Mold Compound	6.384	5.503	63,840		JGPSSI (B08)	40039-93-8		0.70	
Phenolic Resin	Trade Secret	Mold Compound	4.389	3.783	43,890		JGPSSI (A01)	1309-64-4		0.50	
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	1.078	12,500			1333-86-4		0.30	
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	0.559	0.482	5,586		Total 100.00				
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.427	4,954		9.05 (mg) Total	Lead Frame		% of Total Weight	10.5
Diantimony Trioxide	1309-64-4	Mold Compound	0.399	0.344	3,990		10	JGPSSI (D01)		7440-50-8	95.54
Iron	7439-89-6	Lead Frame	0.247	0.213	2,468					7439-89-6	2.35
Carbon Black	1333-86-4	Mold Compound	0.239	0.206	2,394	JGPSSI (D04)		7440-22-4	1.91		
Gold	7440-57-5	Wire Bond	0.200	0.172	2,000			7440-66-6	0.13		
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.170	1,969	Part of Alloy		7723-14-0	0.08		
2,2'-[(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	0.100	1,163	Total 100.00					
2,2'-[methylenebis(o-phenyleneoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.102	0.088	1,020	0.65 (mg) Total	Die Attach	% of Total Weight	0.75		
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.034	394	10	JGPSSI (D04)	7440-22-4	39		
Zinc	7440-66-6	Lead Frame	0.013	0.011	131			14808-60-7	26		
Phosphorous	7723-14-0	Lead Frame	0.009	0.007	87			13561-08-5	16		
TOTALS:								54208-63-8	14		
Various Assembly Sites / Material compilation 0.0862 g Total Mass								827-43-0	5		
							Total 100.00				
						6.47 Total (mg)	Chip (Die)	% of Total Weight	7.5		
							7440-21-3	100			
						Total 100.00					
						0.17 (mg) Total	Wire Bond	% of Total Weight	0.2		
							JGPSSI (D02)	7440-57-5	100		
						Total 100.00					
						1.08 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
							7440-31-5	100.00			
						Total 100.00					
						86.200				100.000	

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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			148.83 (mg) Total	79.8
			Mold Compound	
			60676-86-0	85.00
			Trade Secret	8.00
			Trade Secret	5.50
			JGPSSI (B08)	40039-93-8
				0.70
			JGPSSI (A01)	1309-64-4
				0.50
			1333-86-4	0.30
			Total	100.00
			19.58 (mg) Total	10.5
			Lead Frame	
			JGPSSI (D01)	7440-50-8
				95.54
			7439-89-6	2.35
			JGPSSI (D04)	7440-22-4
				1.91
			7440-66-6	0.13
			Part of Alloy	7723-14-0
				0.08
			Total	100.00
			1.40 (mg) Total	0.75
			Die Attach	
			JGPSSI (D04)	7440-22-4
				39
			14808-60-7	26
			13561-08-5	16
			54208-63-8	14
			827-43-0	5
			Total	100.00
			13.99 Total (mg)	7.5
			Chip (Die)	
			7440-21-3	100
			Total	100.00
			0.37 (mg) Total	0.2
			Wire Bond	
			JGPSSI (D02)	7440-57-5
				100
			Total	100.00
			2.33 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			7440-31-5	100.00
			Total	100.00
			186.500	100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	67.830	126.503	678,300
Copper	7440-50-8	Lead Frame	10.031	18.709	100,314
Silicon	7440-21-3	Chip (Die)	7.500	13.988	75,000
Epoxy Resin	Trade Secret	Mold Compound	6.384	11.906	63,840
Phenolic Resin	Trade Secret	Mold Compound	4.389	8.185	43,890
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	2.331	12,500
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	0.559	1.042	5,586
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.924	4,954
Diantimony Trioxide	1309-64-4	Mold Compound	0.399	0.744	3,990
Iron	7439-89-6	Lead Frame	0.247	0.460	2,468
Carbon Black	1333-86-4	Mold Compound	0.239	0.446	2,394
Gold	7440-57-5	Wire Bond	0.200	0.373	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.367	1,969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.217	1,163
2,2'-(methylenebis(o-phenyleneoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.190	1,020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.073	394
Zinc	7440-66-6	Lead Frame	0.013	0.024	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.016	87
TOTALS:			100.000	186.500	1,000,000

Various Assembly Sites / Material compilation 0.1865 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Compliance with the above EU Directives has been verified via internal design controls, Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports

JGPSSI = Japan Green Procurement Survey Standardization Initiative



Microchip Technology Inc. 2355 W. Chandler Blvd. Chandler, AZ 85224-6199 USA (480) 792-7200 FAX (480) 792-7277



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

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Epoxy Resin	Trade Secret	Mold Compound	6.384	5.011	63,840
Phenolic Resin	Trade Secret	Mold Compound	4.389	3.445	43,890
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.031	394
Phosphorous	7723-14-0	Lead Frame	0.009	0.007	87
Zinc	7440-86-6	Lead Frame	0.013	0.010	131
Gold	7440-57-5	Wire Bond	0.200	0.157	2,000
Copper	7440-50-8	Lead Frame	10.031	7.875	100,314
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.981	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.389	4,954
Silicon	7440-21-3	Chip (Die)	7.500	5.888	75,000
Iron	7439-89-6	Lead Frame	0.247	0.194	2,468
Silica, vitreous	60676-86-0	Mold Compound	67.830	53.247	678,300
2,2'-(methylenebis(o-phenyleneoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.080	1,020
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	0.559	0.439	5,586
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.155	1,969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.091	1,163
Carbon Black	1333-86-4	Mold Compound	0.239	0.188	2,394
Diantimony Trioxide	1309-64-4	Mold Compound	0.399	0.313	3,990
TOTALS:			100.000	78.500	1,000,000

Various Assembly Sites / Material compilation 0.0785 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			62.64 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			Total 100.00	
			8.24 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			Total 100.00	
			0.59 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			Total 100.00	
			5.89 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			Total 100.00	
			0.16 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			Total 100.00	
			0.98 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			Total 100.00	
			78.500	100.000



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

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	53.626	42.096	536,256
Formaldehyde, polymer with (chloromethyl)oxirane and 2-methylphenol	29690-82-2	Mold Compound	15.960	12.529	159,600
Copper	7440-50-8	Lead Frame	10.031	7.875	100,314
Silicon	7440-21-3	Chip (Die)	7.500	5.888	75,000
Phenol-formaldehyde resin	9003-35-4	Mold Compound	5.985	4.698	59,850
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	1.879	23,940
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.596	1.253	15,960
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.981	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.389	4,954
Iron	7439-89-6	Lead Frame	0.247	0.194	2,468
Carbon Black	1333-86-4	Mold Compound	0.239	0.188	2,394
Gold	7440-57-5	Wire Bond	0.200	0.157	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.155	1,969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.091	1,163
2,2'-(methylenebis(o-phenyleneoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.080	1,020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.031	394
Zinc	7440-66-6	Lead Frame	0.013	0.010	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.007	87
TOTALS:			100.000	78.500	1,000,000

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			62.64 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			Total 100.00	
			8.24 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			Total 100.00	
			0.59 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			Total 100.00	
			5.89 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			Total 100.00	
			0.16 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			Total 100.00	
			0.98 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			Total 100.00	
			78.500	100.000

Various Assembly Sites / Material compilation 0.0785 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: LB 3 (Lead) SC-70 (B2 / B.J)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3																				
			<table border="1"> <tr> <td>4.39 (mg) Total</td> <td>Mold Compound</td> <td>% of Total Weight</td> <td>79.8</td> </tr> <tr> <td rowspan="5">13</td> <td>60676-86-0</td> <td>85.00</td> <td rowspan="5"></td> </tr> <tr> <td>Trade Secret</td> <td>6.13</td> </tr> <tr> <td>Trade Secret</td> <td>6.13</td> </tr> <tr> <td>29690-82-2</td> <td>2.45</td> </tr> <tr> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> <td></td> </tr> </table>	4.39 (mg) Total	Mold Compound	% of Total Weight	79.8	13	60676-86-0	85.00		Trade Secret	6.13	Trade Secret	6.13	29690-82-2	2.45	1333-86-4	0.30	Total		100.00		
4.39 (mg) Total	Mold Compound	% of Total Weight	79.8																					
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			<table border="1"> <tr> <td>0.58 (mg) Total</td> <td>Lead Frame</td> <td>% of Total Weight</td> <td>10.5</td> </tr> <tr> <td rowspan="5">10</td> <td>JGPSSI (D01)</td> <td>95.54</td> <td rowspan="5"></td> </tr> <tr> <td>7439-89-6</td> <td>2.35</td> </tr> <tr> <td>JGPSSI (D04)</td> <td>1.91</td> </tr> <tr> <td>7440-66-6</td> <td>0.13</td> </tr> <tr> <td>Part of Alloy</td> <td>0.08</td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> <td></td> </tr> </table>	0.58 (mg) Total	Lead Frame	% of Total Weight	10.5	10	JGPSSI (D01)	95.54		7439-89-6	2.35	JGPSSI (D04)	1.91	7440-66-6	0.13	Part of Alloy	0.08	Total		100.00		
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			<table border="1"> <tr> <td>0.04 (mg) Total</td> <td>Die Attach</td> <td>% of Total Weight</td> <td>0.75</td> </tr> <tr> <td rowspan="5">10</td> <td>JGPSSI (D04)</td> <td>39</td> <td rowspan="5"></td> </tr> <tr> <td>14808-60-7</td> <td>26</td> </tr> <tr> <td>13561-08-5</td> <td>16</td> </tr> <tr> <td>54208-63-8</td> <td>14</td> </tr> <tr> <td>827-43-0</td> <td>5</td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> <td></td> </tr> </table>	0.04 (mg) Total	Die Attach	% of Total Weight	0.75	10	JGPSSI (D04)	39		14808-60-7	26	13561-08-5	16	54208-63-8	14	827-43-0	5	Total		100.00		
0.04 (mg) Total	Die Attach	% of Total Weight	0.75																					
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Total		100.00																						
			<table border="1"> <tr> <td>0.41 Total (mg)</td> <td>Chip (Die)</td> <td>% of Total Weight</td> <td>7.5</td> </tr> <tr> <td rowspan="2"></td> <td>7440-21-3</td> <td>100</td> <td rowspan="2"></td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> </tr> </table>	0.41 Total (mg)	Chip (Die)	% of Total Weight	7.5		7440-21-3	100		Total		100.00										
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			<table border="1"> <tr> <td>0.01 (mg) Total</td> <td>Wire Bond</td> <td>% of Total Weight</td> <td>0.2</td> </tr> <tr> <td rowspan="2"></td> <td>JGPSSI (D02)</td> <td>100</td> <td rowspan="2"></td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> </tr> </table>	0.01 (mg) Total	Wire Bond	% of Total Weight	0.2		JGPSSI (D02)	100		Total		100.00										
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	JGPSSI (D02)	100																						
	Total			100.00																				
			<table border="1"> <tr> <td>0.07 (mg) Total</td> <td>Plating on external leads (pins) - 100% matte tin</td> <td>% of Total Weight</td> <td>1.25</td> </tr> <tr> <td rowspan="2"></td> <td>7440-31-5</td> <td>100.00</td> <td rowspan="2"></td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> </tr> </table>	0.07 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		7440-31-5	100.00		Total		100.00										
0.07 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25																					
	7440-31-5	100.00																						
	Total			100.00																				
TOTALS:			5.500	100.000																				

Various Assembly Sites / Material compilation 0.0055 g Total Mass

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Semiconductor Device Type: LB 3 (Lead) SC-70 (B2 / B.J)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	0.527	95,886
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.002	394
Phosphorous	7723-14-0	Lead Frame	0.009	0.000	87
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	3.153	573,246
Zinc	7440-86-6	Lead Frame	0.013	0.001	131
Gold	7440-57-5	Wire Bond	0.200	0.011	2,000
Copper	7440-50-8	Lead Frame	10.031	0.552	100,314
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.069	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.027	4,954
Silicon	7440-21-3	Chip (Die)	7.500	0.413	75,000
Iron	7439-89-6	Lead Frame	0.247	0.014	2,468
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.006	1,020
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	0.057	10,374
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	0.527	95,886
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.011	1,969
2,2'-[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.006	1,163
Carbon Black	1333-86-4	Mold Compound	0.239	0.013	2,394
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	0.111	20,214
TOTALS:			100.000	5.500	1,000,000

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3		
			4.39 (mg) Total	Mold Compound	% of Total Weight	79.8
				7631-86-9	71.84	
				9003-35-4	12.02	
				37382-79-9	12.02	
				JGPSSI (A01)	2.53	
				1309-64-4	2.53	
				JGPSSI (B08)	1.30	
				40039-93-8	1.30	
				1333-86-4	0.30	
				Total	100.00	
			0.58 (mg) Total	Lead Frame	% of Total Weight	10.5
				JGPSSI (D01)	95.54	
				7440-50-8	95.54	
				7439-89-6	2.35	
				JGPSSI (D04)	1.91	
				7440-22-4	1.91	
				7440-66-6	0.13	
				Part of Alloy	0.08	
				7723-14-0	0.08	
				Total	100.00	
			0.04 (mg) Total	Die Attach	% of Total Weight	0.75
				JGPSSI (D04)	39	
				7440-22-4	39	
				14808-60-7	26	
				13561-08-5	16	
				54208-63-8	14	
				827-43-0	5	
				Total	100.00	
			0.41 Total (mg)	Chip (Die)	% of Total Weight	7.5
				7440-21-3	100	
				Total	100.00	
			0.01 (mg) Total	Wire Bond	% of Total Weight	0.2
				JGPSSI (D02)	100	
				7440-57-5	100	
				Total	100.00	
			0.07 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
				7440-31-5	100.00	
				Total	100.00	
			5.500			100.000

Various Assembly Sites / Material compilation 0.0055 g Total Mass

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Semiconductor Device Type: LT 5 (Lead) SC-70 (B4 / BZ)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			4.95 (mg) Total	79.8
			Mold Compound	
			60676-86-0	85.00
			Trade Secret	6.13
			Trade Secret	6.13
			29690-82-2	2.45
			1333-86-4	0.30
			Total	100.00
			0.65 (mg) Total	10.5
			Lead Frame	
			7440-50-8	95.54
			7439-89-6	2.35
			7440-22-4	1.91
			7440-66-6	0.13
			Part of Alloy	0.08
			Total	100.00
			0.05 (mg) Total	0.75
			Die Attach	
			7440-22-4	39
			JGPSSI (D04)	26
			14808-60-7	26
			13561-08-5	16
			54208-63-8	14
			827-43-0	5
			Total	100.00
			0.47 Total (mg)	7.5
			Chip (Die)	
			7440-21-3	100
			Total	100.00
			0.01 (mg) Total	0.2
			Wire Bond	
			JGPSSI (D02)	100
			7440-57-5	100
			Total	100.00
			0.08 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			7440-31-5	100.00
			Total	100.00
			6.200	100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Epoxy Resin	Trade Secret	Mold Compound	4.888	0.303	48,878
Phenolic Resin	Trade Secret	Mold Compound	4.888	0.303	48,878
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.002	394
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87
Zinc	7440-66-6	Lead Frame	0.013	0.001	131
Gold	7440-57-5	Wire Bond	0.200	0.012	2,000
Copper	7440-50-8	Lead Frame	10.031	0.622	100,314
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.078	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.031	4,954
Silicon	7440-21-3	Chip (Die)	7.500	0.465	75,000
Iron	7439-89-6	Lead Frame	0.247	0.015	2,468
Silica, vitreous	60676-86-0	Mold Compound	67.830	4.205	678,300
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.006	1,020
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.121	19,551
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.012	1,969
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	0.007	1,163
Carbon Black	1333-86-4	Mold Compound	0.239	0.015	2,394
TOTALS:			100.000	6.200	1,000,000

Various Assembly Sites / Material compilation 0.0062 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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JGPSSI = Japan Green Procurement Survey Standardization Initiative



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Semiconductor Device Type: LT 5 (Lead) SC-70 (B4 / BZ)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	4.95 (mg) Total	Mold Compound	% of Total Weight	79.8		
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	3.554	573,246	10		7631-86-9	71.84		
Copper	7440-50-8	Lead Frame	10.031	0.622	100,314			9003-35-4	12.02		
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	0.594	95,886			37382-79-9	12.02		
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	0.594	95,886			JGPSSI (A01)	2.53		
Silicon	7440-21-3	Chip (Die)	7.500	0.465	75,000			JGPSSI (B08)	1.30		
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	0.125	20,214			1333-86-4	0.30		
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.078	12,500			Total	100.00		
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	0.064	10,374		10	0.65 (mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.031	4,954				JGPSSI (D01)	95.54	
Iron	7439-89-6	Lead Frame	0.247	0.015	2,468				7439-89-6	2.35	
Carbon Black	1333-86-4	Mold Compound	0.239	0.015	2,394			JGPSSI (D04)	1.91		
Gold	7440-57-5	Wire Bond	0.200	0.012	2,000			7440-66-6	0.13		
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.012	1,969			Part of Alloy	0.08		
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.007	1,163		Total	100.00			
2,2'-(methylenebis(o-phenyleneoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.006	1,020	10	0.05 (mg) Total	Die Attach	% of Total Weight	0.75	
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.002	394			JGPSSI (D04)	39		
Zinc	7440-66-6	Lead Frame	0.013	0.001	131			14808-60-7	26		
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87			13561-08-5	16		
								54208-63-8	14		
TOTALS:						100.000	6.200	1,000,000			
Various Assembly Sites / Material compilation						0.0062 g Total Mass					
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Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data						Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports					
JGPSSI = Japan Green Procurement Survey Standardization Initiative											
 MICROCHIP www.microchip.com						0.01 (mg) Total		Wire Bond	% of Total Weight	0.2	
							JGPSSI (D02)	7440-57-5	100		
						Total 100.00					
						0.08 (mg) Total		Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
								7440-31-5	100.00		
						Total 100.00					
						6.200		100.000			



Semiconductor Device: OA and SN 8 (Lead) (SOIC) (Small Outline -150mil) (C2 / CC)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3		
			74.92 (mg) Total	Mold Compound	% of Total Weight	79.8
				7631-86-9	71.84	
				9003-35-4	12.02	
				37382-79-9	12.02	
			JGPSSI (A01)	1309-64-4	2.53	
			JGPSSI (B08)	40039-93-8	1.30	
				1333-86-4	0.30	
			Total		100.00	
			2.36 (mg) Total	Lead Frame	% of Total Weight	10.5
			JGPSSI (D01)	7440-50-8	95.54	
				7439-89-6	2.35	
			JGPSSI (D04)	7440-22-4	1.91	
				7440-66-6	0.13	
			Part of Alloy	7723-14-0	0.08	
			Total		100.00	
			0.67 (mg) Total	Die Attach	% of Total Weight	0.75
			JGPSSI (D04)	7440-22-4	39	
				14808-60-7	26	
				13561-08-5	16	
				54208-63-8	14	
				827-43-0	5	
			Total		100.00	
			0.03 Total (mg)	Chip (Die)	% of Total Weight	7.5
				7440-21-3	100	
			Total		100.00	
			0.01 (mg) Total	Wire Bond	% of Total Weight	0.2
			JGPSSI (D02)	7440-57-5	100	
			Total		100.00	
			0.01 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
				7440-31-5	100.00	
			Total		100.00	
TOTALS:			100.000	78.000	1,000,000	
Various Assembly Sites / Material compilation			0.0780 g Total Mass			

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device: OA and SN 8 (Lead) (SOIC) (Small Outline -150mil) (C2 / CC)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			62.24 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			60676-86-0	85.00
			Trade Secret	6.13
			Trade Secret	6.13
			29690-82-2	2.45
			1333-86-4	0.30
			Total	100.00
			8.19 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			7440-50-8	95.54
			7439-89-6	2.35
			JGPSSI (D01)	1.91
			JGPSSI (D04)	0.13
			7440-66-6	0.08
			Part of Alloy	0.08
			Total	100.00
			0.59 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			JGPSSI (D04)	39
			7440-22-4	26
			14808-60-7	16
			13561-08-5	14
			54208-63-8	5
			827-43-0	
			Total	100.00
			5.85 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			7440-21-3	100
			Total	100.00
			0.16 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			JGPSSI (D02)	100
			7440-57-5	
			Total	100.00
			0.98 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			7440-31-5	100.00
			Total	100.00
			78.000	100.000

Various Assembly Sites / Material compilation 0.0780 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
							114.27 (mg) Total	Mold Compound	% of Total Weight	79.8	
								60676-86-0	85.00		
								Trade Secret	13.80		
								Trade Secret	1.00		
								1333-86-4	0.20		
							Total			100.00	
							15.04 (mg) Total	Lead Frame	% of Total Weight	10.5	
								JGPSSI (D01)	7440-50-8	95.54	
								7439-89-6	2.35		
								JGPSSI (D04)	7440-22-4	1.91	
								7440-66-6	0.13		
								Part of Alloy	7723-14-0	0.08	
							Total			100.00	
							1.07 (mg) Total	Die Attach	% of Total Weight	0.75	
								JGPSSI (D04)	7440-22-4	82	
								Trade Secret	9		
								Trade Secret	5		
								Trade Secret	5		
							Total			100.00	
							10.74 Total (mg)	Chip (Die)	% of Total Weight	7.5	
								7440-21-3	100		
							Total			100.00	
							0.29 (mg) Total	Wire Bond	% of Total Weight	0.2	
								JGPSSI (D02)	7440-57-5	100	
							Total			100.00	
							1.79 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
								7440-31-5	100.00		
							Total			100.00	
							TOTALS:			100.000 143.200 1,000,000	
Assembly Site: HANA				0.1432 g Total Mass							

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

Termination Base Alloy : Copper Alloy (Cu)			RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
					114.27 (mg) Total	79.8
					Mold Compound	
					% of Total Weight	
					60676-86-0	85.00
					Trade Secret	6.13
					Trade Secret	6.13
					29690-82-2	2.45
					1333-86-4	0.30
					Total	100.00
					15.04 (mg) Total	10.5
					Lead Frame	
					% of Total Weight	
					JGPSSI (D01)	95.54
					7439-89-6	2.35
					JGPSSI (D04)	1.91
					7440-22-4	0.13
					7440-66-6	0.13
					Part of Alloy	0.08
					Total	100.00
					1.07 (mg) Total	0.75
					Die Attach	
					% of Total Weight	
					JGPSSI (D04)	39
					7440-22-4	26
					14808-60-7	16
					13561-08-5	16
					54208-63-8	14
					827-43-0	5
					Total	100.00
					10.74 Total (mg)	7.5
					Chip (Die)	
					% of Total Weight	
					7440-21-3	100
					Total	100.00
					0.29 (mg) Total	0.2
					Wire Bond	
					% of Total Weight	
					JGPSSI (D02)	100
					7440-57-5	
					Total	100.00
					1.79 (mg) Total	1.25
					Plating on external leads (pins) - 100% matte tin	
					% of Total Weight	
					7440-31-5	100.00
					Total	100.00
					143.200	100.000

Various Assembly Sites / Material compilation 0.1432 g Total Mass

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
				% Total Weight	mg/part	ppm	116.51 (mg) Total	Mold Compound	% of Total Weight	79.8	
13								60676-86-0	85.00		
								Trade Secret	6.13		
								Trade Secret	6.13		
								29690-82-2	2.45		
								1333-86-4	0.30		
							Total		100.00		
				% Total Weight	mg/part	ppm	15.33 (mg) Total	Lead Frame	% of Total Weight	10.5	
10								JGPSSI (D01)	7440-50-8	95.54	
								7439-89-6	2.35		
								JGPSSI (D04)	7440-22-4	1.91	
								7440-66-6	0.13		
								Part of Alloy	7723-14-0	0.08	
							Total		100.00		
				% Total Weight	mg/part	ppm	1.10 (mg) Total	Die Attach	% of Total Weight	0.75	
10								JGPSSI (D04)	7440-22-4	39	
								14808-60-7	26		
								13561-08-5	16		
								54208-63-8	14		
								827-43-0	5		
							Total		100.00		
				% Total Weight	mg/part	ppm	10.95 Total (mg)	Chip (Die)	% of Total Weight	7.5	
								7440-21-3	100		
							Total		100.00		
				% Total Weight	mg/part	ppm	0.29 (mg) Total	Wire Bond	% of Total Weight	0.2	
								JGPSSI (D02)	7440-57-5	100	
							Total		100.00		
				% Total Weight	mg/part	ppm	1.83 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
								7440-31-5	100.00		
							Total		100.00		
Various Assembly Sites / Material compilation				0.1460 g Total Mass			146.000				100.000

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: OE 16 (Lead) SOIC (Wide Outline - 300mil) (D9 / DZ)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
				% Total Weight	mg/part	ppm	330.93 (mg) Total	Mold Compound	% of Total Weight	79.8
13				67.830	281.291	678.300		60676-86-0	85.00	
				10.031	41.600	100.314		Trade Secret	6.13	
				7.500	31.103	75.000		Trade Secret	6.13	
				4.888	20.269	48.878		29690-82-2	2.45	
				4.888	20.269	48.878		1333-86-4	0.30	
							Total		100.00	
				43.54 (mg) Total	Lead Frame	% of Total Weight	10.5			
10				0.495	2.054	4.954		JGPSSI (D01)	95.54	
				0.247	1.023	2.468		7439-89-6	2.35	
				0.239	0.993	2.394		JGPSSI (D04)	1.91	
				0.200	0.829	2.000		7440-66-6	0.13	
				0.197	0.817	1.969		Part of Alloy	0.08	
							Total		100.00	
				3.11 (mg) Total	Die Attach	% of Total Weight	0.75			
10				0.039	0.163	394		JGPSSI (D04)	39	
				0.013	0.054	131		14808-60-7	26	
				0.009	0.036	87		13561-08-5	16	
								54208-63-8	14	
								827-43-0	5	
							Total		100.00	
				31.10 Total (mg)	Chip (Die)	% of Total Weight	7.5			
								7440-21-3	100	
							Total		100.00	
				0.83 (mg) Total	Wire Bond	% of Total Weight	0.2			
								JGPSSI (D02)	100	
							Total		100.00	
				5.18 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25			
								7440-31-5	100.00	
							Total		100.00	
Various Assembly Sites / Material compilation				0.4147 g Total Mass			447.700	100.000		

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

			Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			383.84	(mg) Total	Mold Compound	% of Total Weight	79.8		
					60676-86-0	85.00			
					Trade Secret	6.13			
					Trade Secret	6.13			
					29690-82-2	2.45			
					1333-86-4	0.30			
					Total	100.00			
			50.51	(mg) Total	Lead Frame	% of Total Weight	10.5		
					JGPSSI (D01)	95.54			
					7439-89-6	2.35			
					JGPSSI (D04)	1.91			
					7440-22-4	1.91			
					7440-66-6	0.13			
					Part of Alloy	0.08			
					Total	100.00			
			3.61	(mg) Total	Die Attach	% of Total Weight	0.75		
					JGPSSI (D04)	39			
					14808-60-7	26			
					13561-08-5	16			
					54208-63-8	14			
					827-43-0	5			
					Total	100.00			
			36.08	Total (mg)	Chip (Die)	% of Total Weight	7.5		
					7440-21-3	100			
					Total	100.00			
			0.96	(mg) Total	Wire Bond	% of Total Weight	0.2		
					JGPSSI (D02)	100			
					Total	100.00			
			6.01	(mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
					7440-31-5	100.00			
					Total	100.00			
			481.000					100.000	

Various Assembly Sites / Material compilation 0.4810 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Compliance with the above EU Directives has been verified via internal design controls, Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free supplier declarations, and /or analytical test data Information > Pb Free Links: Pb Free Laboratory Analytical Reports

JGPSSI = Japan Green Procurement Survey Standardization Initiative



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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	383.84	(mg) Total	Mold Compound	% of Total Weight	79.8			
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	275.731	573.246	10		7631-86-9	71.84				
Copper	7440-50-8	Lead Frame	10.031	48.251	100,314			9003-35-4	12.02				
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	46.121	95,886			37382-79-9	12.02				
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	46.121	95,886			JGPSSI (A01)	2.53				
Silicon	7440-21-3	Chip (Die)	7.500	36.075	75,000			JGPSSI (B08)	1.30				
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	9.723	20,214			1333-86-4	0.30				
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	6.013	12,500			Total	100.00				
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	4.990	10,374		10	50.51	(mg) Total		Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.495	2.383	4,954				JGPSSI (D01)		7440-50-8	95.54	
Iron	7439-89-6	Lead Frame	0.247	1.187	2,468						7439-89-6	2.35	
Carbon Black	1333-86-4	Mold Compound	0.239	1.152	2,394				JGPSSI (D04)	7440-22-4	1.91		
Gold	7440-57-5	Wire Bond	0.200	0.962	2,000				7440-66-6	0.13			
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.947	1,969				Part of Alloy	7723-14-0	0.08		
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.559	1,163		Total	100.00					
2,2'-(methylenebis(o-phenyleneoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.491	1,020	10	3.61	(mg) Total	Die Attach	% of Total Weight	0.75		
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.189	394			JGPSSI (D04)	7440-22-4	39			
Zinc	7440-66-6	Lead Frame	0.013	0.063	131				14808-60-7	26			
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87				13561-08-5	16			
									54208-63-8	14			
								827-43-0	5				
							Total	100.00					
Various Assembly Sites / Material compilation 0.4810 g Total Mass						10	36.08	Total (mg)	Chip (Die)	% of Total Weight	7.5		
									7440-21-3	100			
								Total	100.00				
							0.96	(mg) Total	Wire Bond	% of Total Weight	0.2		
								JGPSSI (D02)	7440-57-5	100			
							Total	100.00					
							6.01	(mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
									7440-31-5	100.00			
							Total	100.00					
						481.000					100.000		

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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JGPSSI = Japan Green Procurement Survey Standardization Initiative



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

Termination Base Alloy : Copper Alloy (Cu)			RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
422.06 (mg) Total			Mold Compound	% of Total Weight	79.8	
11		60676-86-0	67.20			
		29690-82-2	20.00			
		9003-35-4	7.50			
		JGPSSI (A01)	3.00			
		JGPSSI (B08)	2.00			
		1333-86-4	0.30			
Total			100.00			
55.53 (mg) Total			Lead Frame	% of Total Weight	10.5	
10		JGPSSI (D01)	94.00			
		Alloy-non-skin contact	3.20			
		JGPSSI (D04)	1.91			
		7440-21-3	0.73			
		JGPSSI (A16)	0.18			
Total			100.00			
3.97 (mg) Total			Die Attach	% of Total Weight	0.75	
11		JGPSSI (D04)	82			
		13561-08-5	10			
		54208-63-8	6			
		827-43-0	3			
Total			100.00			
39.67 Total (mg)			Chip (Die)	% of Total Weight	7.5	
		7440-21-3	100			
Total			100.00			
1.06 (mg) Total			Wire Bond	% of Total Weight	0.2	
		JGPSSI (D02)	100			
Total			100.00			
6.61 (mg) Total			Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
		7440-31-5	100.00			
Total			100.00			
528.900						100.000

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			422.06 (mg) Total	79.8
			Mold Compound	
			60676-86-0	85.00
			Trade Secret	6.13
			Trade Secret	6.13
			29690-82-2	2.45
			1333-86-4	0.30
			Total	100.00
			55.53 (mg) Total	10.5
			Lead Frame	
			7440-50-8	95.54
			7439-89-6	2.35
			7440-22-4	1.91
			7440-66-6	0.13
			7723-14-0	0.08
			Total	100.00
			3.97 (mg) Total	0.75
			Die Attach	
			7440-22-4	39
			14808-60-7	26
			13561-08-5	16
			54208-63-8	14
			827-43-0	5
			Total	100.00
			39.67 Total (mg)	7.5
			Chip (Die)	
			7440-21-3	100
			Total	100.00
			1.06 (mg) Total	0.2
			Wire Bond	
			7440-57-5	100
			Total	100.00
			6.61 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			7440-31-5	100.00
			Total	100.00
			528.900	100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Epoxy Resin	Trade Secret	Mold Compound	4.888	25.851	48,878
Phenolic Resin	Trade Secret	Mold Compound	4.888	25.851	48,878
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.208	394
Phosphorous	7723-14-0	Lead Frame	0.009	0.046	87
Zinc	7440-66-6	Lead Frame	0.013	0.069	131
Gold	7440-57-5	Wire Bond	0.200	1.058	2,000
Copper	7440-50-8	Lead Frame	10.031	53.056	100,314
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	6.611	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	2.620	4,954
Silicon	7440-21-3	Chip (Die)	7.500	39.668	75,000
Iron	7439-89-6	Lead Frame	0.247	1.305	2,468
Silica, vitreous	60676-86-0	Mold Compound	67.830	358.753	678,300
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.540	1,020
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	10.341	19,551
Quartz (SiO2)	14808-60-7	Die Attach	0.197	1.042	1,969
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	0.615	1,163
Carbon Black	1333-86-4	Mold Compound	0.239	1.266	2,394
TOTALS:			100.000	528.900	1,000,000

Various Assembly Sites / Material compilation 0.5289 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			530.67 (mg) Total	79.8
			Mold Compound	
			60676-86-0	85.00
			Trade Secret	6.13
			Trade Secret	6.13
			29690-82-2	2.45
			1333-86-4	0.30
			Total	100.00
			69.83 (mg) Total	10.5
			Lead Frame	
			7440-50-8	95.54
			7439-89-6	2.35
			7440-22-4	1.91
			7440-66-6	0.13
			7723-14-0	0.08
			Total	100.00
			4.99 (mg) Total	0.75
			Die Attach	
			7440-22-4	39
			14808-60-7	26
			13561-08-5	16
			54208-63-8	14
			827-43-0	5
			Total	100.00
			49.88 Total (mg)	7.5
			Chip (Die)	
			7440-21-3	100
			Total	100.00
			1.33 (mg) Total	0.2
			Wire Bond	
			7440-57-5	100
			Total	100.00
			8.31 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			7440-31-5	100.00
			Total	100.00
			665.000	100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	67.830	451.070	678.300
Copper	7440-50-8	Lead Frame	10.031	66.709	100,314
Silicon	7440-21-3	Chip (Die)	7.500	49.875	75,000
Epoxy Resin	Trade Secret	Mold Compound	4.888	32.504	48,878
Phenolic Resin	Trade Secret	Mold Compound	4.888	32.504	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	13.001	19,551
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	8.313	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	3.295	4,954
Iron	7439-89-6	Lead Frame	0.247	1.641	2,468
Carbon Black	1333-86-4	Mold Compound	0.239	1.592	2,394
Gold	7440-57-5	Wire Bond	0.200	1.330	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	1.310	1,969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.773	1,163
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.678	1,020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.262	394
Zinc	7440-66-6	Lead Frame	0.013	0.087	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.058	87
TOTALS:			100.000	665.000	1,000,000

Various Assembly Sites / Material compilation 0.6650 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3		
				614.78 (mg) Total	Mold Compound	% of Total Weight	79.8					
				13	60676-86-0	Mold Compound	67.830	522.562	678.300	60676-86-0	85.00	
					7440-50-8	Lead Frame	10.031	77.282	100.314	Trade Secret	6.13	
					7440-21-3	Chip (Die)	7.500	57.780	75.000	Trade Secret	6.13	
					Trade Secret	Mold Compound	4.888	37.655	48.878	29690-82-2	2.45	
					Trade Secret	Mold Compound	4.888	37.655	48.878	1333-86-4	0.30	
					29690-82-2	Mold Compound	1.955	15.062	19.551	Total 100.00		
					7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	9.630	12.500	80.89 (mg) Total		
					7440-22-4	Lead Frame + Die Attach	0.495	3.817	4.954	Lead Frame	% of Total Weight	
					7439-89-6	Lead Frame	0.247	1.901	2.468	7440-50-8	95.54	
					1333-86-4	Mold Compound	0.239	1.844	2.394	7439-89-6	2.35	
					7440-57-5	Wire Bond	0.200	1.541	2.000	7440-22-4	1.91	
					14808-60-7	Die Attach	0.197	1.517	1.969	7440-66-6	0.13	
					13561-08-5	Die Attach	0.116	0.896	1.163	7723-14-0	0.08	
					54208-63-8	Die Attach	0.102	0.786	1.020	Total 100.00		
					827-43-0	Die Attach	0.039	0.303	394	5.78 (mg) Total		
					7440-66-6	Lead Frame	0.013	0.101	131	Die Attach	% of Total Weight	
					7723-14-0	Lead Frame	0.009	0.067	87	JGPSSI (D04)	39	
					TOTALS:			100.000	770.400	1,000,000	14808-60-7	26
					Various Assembly Sites / Material compilation			0.7704 g Total Mass			13561-08-5	16
											54208-63-8	14
											827-43-0	5
											Total 100.00	
											57.78 Total (mg)	
											Chip (Die)	% of Total Weight
											7440-21-3	100
											Total 100.00	
											1.54 (mg) Total	
											Wire Bond	% of Total Weight
											JGPSSI (D02)	100
											Total 100.00	
											9.63 (mg) Total	
											Plating on external leads (pins) - 100% matte tin	% of Total Weight
											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) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: SM 8 (Lead) SOIJ (Small Outline-208mil) (C3 / CD)

Termination Base Alloy : Copper Alloy (Cu)			RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3																		
					99.27 (mg) Total	Mold Compound	% of Total Weight	79.8																		
					<table border="1"> <tr> <td>60676-86-0</td> <td>85.00</td> </tr> <tr> <td>Trade Secret</td> <td>13.80</td> </tr> <tr> <td>Trade Secret</td> <td>1.00</td> </tr> <tr> <td>1333-86-4</td> <td>0.20</td> </tr> <tr> <td>Total</td> <td>100.00</td> </tr> </table>			60676-86-0	85.00	Trade Secret	13.80	Trade Secret	1.00	1333-86-4	0.20	Total	100.00									
60676-86-0	85.00																									
Trade Secret	13.80																									
Trade Secret	1.00																									
1333-86-4	0.20																									
Total	100.00																									
					13.06 (mg) Total	Lead Frame	% of Total Weight	10.5																		
					<table border="1"> <tr> <td>JGPSSI (D01)</td> <td>7440-50-8</td> <td>95.54</td> </tr> <tr> <td></td> <td>7439-89-6</td> <td>2.35</td> </tr> <tr> <td>JGPSSI (D04)</td> <td>7440-22-4</td> <td>1.91</td> </tr> <tr> <td></td> <td>7440-66-6</td> <td>0.13</td> </tr> <tr> <td>Part of Alloy</td> <td>7723-14-0</td> <td>0.08</td> </tr> <tr> <td>Total</td> <td>100.00</td> <td></td> </tr> </table>			JGPSSI (D01)	7440-50-8	95.54		7439-89-6	2.35	JGPSSI (D04)	7440-22-4	1.91		7440-66-6	0.13	Part of Alloy	7723-14-0	0.08	Total	100.00		
JGPSSI (D01)	7440-50-8	95.54																								
	7439-89-6	2.35																								
JGPSSI (D04)	7440-22-4	1.91																								
	7440-66-6	0.13																								
Part of Alloy	7723-14-0	0.08																								
Total	100.00																									
					0.93 (mg) Total	Die Attach	% of Total Weight	0.75																		
					<table border="1"> <tr> <td>JGPSSI (D04)</td> <td>7440-22-4</td> <td>82</td> </tr> <tr> <td></td> <td>Trade Secret</td> <td>9</td> </tr> <tr> <td></td> <td>Trade Secret</td> <td>5</td> </tr> <tr> <td></td> <td>Trade Secret</td> <td>5</td> </tr> <tr> <td>Total</td> <td>100.00</td> <td></td> </tr> </table>			JGPSSI (D04)	7440-22-4	82		Trade Secret	9		Trade Secret	5		Trade Secret	5	Total	100.00					
JGPSSI (D04)	7440-22-4	82																								
	Trade Secret	9																								
	Trade Secret	5																								
	Trade Secret	5																								
Total	100.00																									
					9.33 Total (mg)	Chip (Die)	% of Total Weight	7.5																		
					<table border="1"> <tr> <td></td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td>Total</td> <td>100.00</td> <td></td> </tr> </table>				7440-21-3	100	Total	100.00														
	7440-21-3	100																								
Total	100.00																									
					0.25 (mg) Total	Wire Bond	% of Total Weight	0.2																		
					<table border="1"> <tr> <td>JGPSSI (D02)</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td>Total</td> <td>100.00</td> <td></td> </tr> </table>			JGPSSI (D02)	7440-57-5	100	Total	100.00														
JGPSSI (D02)	7440-57-5	100																								
Total	100.00																									
					1.56 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25																		
					<table border="1"> <tr> <td></td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td>Total</td> <td>100.00</td> <td></td> </tr> </table>				7440-31-5	100.00	Total	100.00														
	7440-31-5	100.00																								
Total	100.00																									
TOTALS:			100.000	124.400	1,000,000			124.400																		

Assembly Site: HANA 0.1244 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: SM 8 (Lead) SOIJ (Small Outline-208 mil) (C3 / CD)

Termination Base Alloy : Copper Alloy (Cu)				RSRC 2	RSRC 5	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		
TOTALS:						99.27 (mg) Total	79.8
10						99.27 (mg) Total	79.8
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	71.312	573,246	7631-86-9	71.84
Copper	7440-50-8	Lead Frame	10.031	12.479	100,314	9003-35-4	12.02
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	11.928	95,886	37382-79-9	12.02
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	11.928	95,886	JGPSSI (A01)	2.53
Silicon	7440-21-3	Chip (Die)	7.500	9.330	75,000	JGPSSI (B08)	1.30
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	2.515	20,214	1333-86-4	0.30
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	1.555	12,500	Total	100.00
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	1.291	10,374	13.06 (mg) Total	10.5
Silver	7440-22-4	Lead Frame	0.815	1.014	8,150	JGPSSI (D01)	95.54
Iron	7439-89-6	Lead Frame	0.247	0.307	2,468	7439-89-6	2.35
Carbon Black	1333-86-4	Mold Compound	0.239	0.298	2,394	JGPSSI (D04)	1.91
Gold	7440-57-5	Wire Bond	0.200	0.249	2,000	7440-66-6	0.13
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.075	0.093	750	Part of Alloy	0.08
2,2'-[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.041	0.051	413	Total	100.00
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.023	188	0.93 (mg) Total	0.75
Zinc	7440-66-6	Lead Frame	0.013	0.016	131	JGPSSI (D04)	82
Phosphorous	7723-14-0	Lead Frame	0.009	0.011	87	13561-08-5	10
						54208-63-8	6
						827-43-0	3
						Total	100.00
Various Assembly Sites / Material compilation						0.1244 g Total Mass	
11						9.33 Total (mg)	7.5
						7440-21-3	100
						Total	100.00
						0.25 (mg) Total	0.2
						JGPSSI (D02)	100
						Total	100.00
						1.56 (mg) Total	1.25
						Plating on external leads (pins) - 100% matte tin	
						7440-31-5	100.00
						Total	100.00
124.400						124.400	100.000

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: CB and NB and TT 3 (Lead) SOT-23 (C6 / CV)

Termination Base: Alloy 42	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			6.62 (mg) Total	Mold Compound	% of Total Weight	79.8
			Total			100.00
			0.87 (mg) Total	Lead Frame	% of Total Weight	10.5
			Total			100.00
			0.06 (mg) Total	Die Attach	% of Total Weight	0.75
			Total			100.00
			0.62 Total (mg)	Chip (Die)	% of Total Weight	7.5
			Total			100.00
			0.02 (mg) Total	Wire Bond	% of Total Weight	0.2
			Total			100.00
			0.10 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
			Total			100.00
			8.300	(Node ID 43453089)		100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	4.758	573.246
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	0.796	95.886
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	0.796	95.886
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.532	0.625	75.315
Iron	7439-89-6	Lead Frame	5.614	0.466	56.144
Nickel	7440-02-0	Lead Frame	4.410	0.366	44.100
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	0.168	20.214
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.104	12.500
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	0.086	10.374
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.041	4.954
Carbon Black	1333-86-4	Mold Compound	0.239	0.020	2.394
Gold	7440-57-5	Wire Bond	0.200	0.017	2.000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.016	1.969
2,2'-[(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	0.010	1.163
Cobalt	7440-48-4	Lead Frame	0.105	0.009	1.050
2,2'-[methylenebis(o-phenyleneoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.102	0.008	1.020
Manganese	7439-96-5	Lead Frame	0.084	0.007	840
Carbon	7440-44-0	Lead Frame	0.053	0.004	525
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.003	394
Phosphorous	7723-14-0	Lead Frame	0.003	0.000	26
TOTALS:			100.000	8.300	1,000.000

Various Assembly Sites / Material compilation 0.0083 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: CH and OT 6 (Lead) SOT-23 (C8 / CZ)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	9.745	573,246
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	1.630	95,886
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	1.630	95,886
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	0.344	20,214
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.213	12,500
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	0.176	10,374
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.084	4,954
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468
Carbon Black	1333-86-4	Mold Compound	0.239	0.041	2,394
Gold	7440-57-5	Wire Bond	0.200	0.034	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.033	1,969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.020	1,163
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.017	1,020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.007	394
Zinc	7440-66-6	Lead Frame	0.013	0.002	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87
TOTALS:			100.000	17.000	1,000,000

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3
			13.57 (mg) Total	79.8
			Mold Compound	
			% of Total Weight	
			Total 100.00	
			1.79 (mg) Total	10.5
			Lead Frame	
			% of Total Weight	
			Total 100.00	
			0.13 (mg) Total	0.75
			Die Attach	
			% of Total Weight	
			Total 100.00	
			1.28 Total (mg)	7.5
			Chip (Die)	
			% of Total Weight	
			Total 100.00	
			0.03 (mg) Total	0.2
			Wire Bond	
			% of Total Weight	
			Total 100.00	
			0.21 (mg) Total	1.25
			Plating on external leads (pins) - 100% matte tin	
			% of Total Weight	
			Total 100.00	
			17.000	100.000

Various Assembly Sites / Material compilation 0.0170 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: RC 4 (Lead) SOT-143 (F7 / AB)

			Termination Base: Alloy 42	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			7.02 (mg) Total	Mold Compound	% of Total Weight	79.8			
			Total			100.00			
			0.92 (mg) Total	Lead Frame	% of Total Weight	10.5			
			Total			100.00			
			0.07 (mg) Total	Die Attach	% of Total Weight	0.75			
			Total			100.00			
			0.66 Total (mg)	Chip (Die)	% of Total Weight	7.5			
			Total			100.00			
			0.02 (mg) Total	Wire Bond	% of Total Weight	0.2			
			Total			100.00			
			0.11 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25			
			Total			100.00			
			8.800				100.000		

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	63.202	5.562	632,016
Epoxy, cresol novolac	29690-82-2	Mold Compound	7.980	0.702	79,800
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.532	0.663	75,315
Iron	7439-89-6	Lead Frame	5.614	0.494	56,144
Nickel	7440-02-0	Lead Frame	4.410	0.388	44,100
Phenol-formaldehyde resin	9003-35-4	Mold Compound	3.990	0.351	39,900
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	0.211	23,940
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	1.995	0.176	19,950
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.110	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.044	4,954
Carbon Black	1333-86-4	Mold Compound	0.239	0.021	2,394
Gold	7440-57-5	Wire Bond	0.200	0.018	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.017	1,969
2,2'-[(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	0.010	1,163
Cobalt	7440-48-4	Lead Frame	0.105	0.009	1,050
2,2'-[methylenebis(o-phenylenoxy)methylene]bisoxirane	54208-63-8	Die Attach	0.102	0.009	1,020
Manganese	7439-96-5	Lead Frame	0.084	0.007	840
Carbon	7440-44-0	Lead Frame	0.053	0.005	525
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.003	394
Phosphorous	7723-14-0	Lead Frame	0.003	0.000	26
TOTALS:			100.000	8.800	1,000.000

Various Assembly Sites / Material compilation 0.0088 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: DB 3 (Lead) SOT-223 (F6)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			94.08 (mg) Total	Mold Compound	% of Total Weight	79.8
				60676-86-0	85.00	
				Trade Secret	6.13	
				Trade Secret	6.13	
				29690-82-2	2.45	
				1333-86-4	0.30	
				Total	100.00	
			12.38 (mg) Total	Lead Frame	% of Total Weight	10.5
				JGPSSI (D01)	95.54	
				7439-89-6	2.35	
				JGPSSI (D04)	1.91	
				7440-22-4	0.13	
				7440-66-6	0.13	
				Part of Alloy	0.08	
				Total	100.00	
			0.88 (mg) Total	Die Attach	% of Total Weight	0.75
				JGPSSI (D04)	39	
				14808-60-7	26	
				13561-08-5	16	
				54208-63-8	14	
				827-43-0	5	
				Total	100.00	
			8.84 Total (mg)	Chip (Die)	% of Total Weight	7.5
				7440-21-3	100	
				Total	100.00	
			0.24 (mg) Total	Wire Bond	% of Total Weight	0.2
				JGPSSI (D02)	100	
				Total	100.00	
			1.47 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
				7440-31-5	100.00	
				Total	100.00	
			117.900			100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	67.830	79.972	678,300
Copper	7440-50-8	Lead Frame	10.031	11.827	100,314
Silicon	7440-21-3	Chip (Die)	7.500	8.843	75,000
Epoxy Resin	Trade Secret	Mold Compound	4.888	5.763	48,878
Phenolic Resin	Trade Secret	Mold Compound	4.888	5.763	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	2.305	19,551
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	1.474	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.584	4,954
Iron	7439-89-6	Lead Frame	0.247	0.291	2,468
Carbon Black	1333-86-4	Mold Compound	0.239	0.282	2,394
Gold	7440-57-5	Wire Bond	0.200	0.236	2,000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.232	1,969
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.137	1,163
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.120	1,020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.046	394
Zinc	7440-66-6	Lead Frame	0.013	0.015	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.010	87
TOTALS:			100.000	117.900	1,000,000

Various Assembly Sites / Material compilation 0.1179 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: DB 3 (Lead) SOT-223 (F6)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	94.08 (mg) Total	Mold Compound	% of Total Weight	79.8																																	
Silica, vitreous	60676-86-0	Mold Compound	63.202	74.515	632,016	14	60676-86-0	79.20																																		
Copper	7440-50-8	Lead Frame	10.031	11.827	100,314		29690-82-2	10.00																																		
Epoxy, cresol novolac	29690-82-2	Mold Compound	7.980	9.408	79,800		9003-35-4	5.00																																		
Silicon	7440-21-3	Chip (Die)	7.500	8.843	75,000		JGPSSI (A01)	3.00																																		
Phenol-formaldehyde resin	9003-35-4	Mold Compound	3.990	4.704	39,900		JGPSSI (B08)	2.50																																		
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	2.823	23,940		1333-86-4	0.30																																		
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	1.995	2.352	19,950		Total 100.00																																			
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	1.474	12,500		12.38 (mg) Total			10	Lead Frame		10.5																													
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.584	4,954		JGPSSI (D01)	95.54																																		
Iron	7439-89-6	Lead Frame	0.247	0.291	2,468		7439-89-6	2.35																																		
Carbon Black	1333-86-4	Mold Compound	0.239	0.282	2,394		JGPSSI (D04)	1.91																																		
Gold	7440-57-5	Wire Bond	0.200	0.236	2,000		7440-66-6	0.13																																		
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.232	1,969		Part of Alloy	0.08																																		
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.137	1,163		Total 100.00																																			
2,2'-(methylenebis(o-phenyleneoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.120	1,020	0.88 (mg) Total		10	Die Attach		0.75																															
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.046	394	JGPSSI (D04)	39																																			
Zinc	7440-66-6	Lead Frame	0.013	0.015	131	14808-60-7	26																																			
Phosphorous	7723-14-0	Lead Frame	0.009	0.010	87	13561-08-5	16																																			
TOTALS:						100.000	117.900		1,000,000			Total 100.00																														
Various Assembly Sites / Material compilation						0.1179 g Total Mass																																				
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).						<table border="1"> <thead> <tr> <th>8.84 Total (mg)</th> <th>Chip (Die)</th> <th>% of Total Weight</th> <th>7.5</th> </tr> </thead> <tbody> <tr> <td></td> <td>7440-21-3</td> <td>100</td> <td rowspan="2">Total 100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total</td> </tr> <tr> <td colspan="3" style="text-align: right;">0.24 (mg) Total</td> <td rowspan="2">100.00</td> </tr> <tr> <td>JGPSSI (D02)</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="3" style="text-align: right;">1.47 (mg) Total</td> <td rowspan="2">100.00</td> </tr> <tr> <td colspan="2" style="text-align: right;">Plating on external leads (pins) - 100% matte tin</td> <td>% of Total Weight</td> <td>1.25</td> </tr> <tr> <td></td> <td>7440-31-5</td> <td>100.00</td> <td>Total 100.00</td> </tr> </tbody> </table>						8.84 Total (mg)		Chip (Die)	% of Total Weight	7.5		7440-21-3	100	Total 100.00	Total			0.24 (mg) Total			100.00	JGPSSI (D02)	7440-57-5	100	1.47 (mg) Total			100.00	Plating on external leads (pins) - 100% matte tin		% of Total Weight	1.25		7440-31-5	100.00	Total 100.00
8.84 Total (mg)	Chip (Die)	% of Total Weight	7.5																																							
	7440-21-3	100	Total 100.00																																							
Total																																										
0.24 (mg) Total			100.00																																							
JGPSSI (D02)	7440-57-5	100																																								
1.47 (mg) Total			100.00																																							
Plating on external leads (pins) - 100% matte tin		% of Total Weight		1.25																																						
	7440-31-5	100.00	Total 100.00																																							
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Microchip Technology Inc. 2355 W. Chandler Blvd. Chandler, AZ 85224-6199 USA (480) 792-7200 FAX (480) 792-7277



Semiconductor Device Type: SS 24 (Lead) SSOP .209" (J2 / JH)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	151.46 (mg) Total	Mold Compound	% of Total Weight	79.8	
Silica, vitreous	60676-86-0	Mold Compound	67.830	128.741	678,300	13	60676-86-0	85.00		
Copper	7440-50-8	Lead Frame	10.031	19.040	100,314		Trade Secret	6.13		
Silicon	7440-21-3	Chip (Die)	7.500	14.235	75,000		Trade Secret	6.13		
Epoxy Resin	Trade Secret	Mold Compound	4.888	9.277	48,878		29690-82-2	2.45		
Phenolic Resin	Trade Secret	Mold Compound	4.888	9.277	48,878		1333-86-4	0.30		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	3.711	19,551		Total	100.00		
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	2.373	12,500	19.93 (mg) Total	Lead Frame	% of Total Weight	10.5	
Silver	7440-22-4	Lead Frame + Die Attach	0.815	1.547	8,150	10	JGPSSI (D01)	7440-50-8	95.54	
Iron	7439-89-6	Lead Frame	0.247	0.468	2,468			7439-89-6	2.35	
Carbon Black	1333-86-4	Mold Compound	0.239	0.454	2,394		JGPSSI (D04)	7440-22-4	1.91	
Gold	7440-57-5	Wire Bond	0.200	0.380	2,000			7440-66-6	0.13	
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.075	0.142	750		Part of Alloy	7723-14-0	0.08	
2,2'-[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.041	0.078	413	Total	100.00			
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.036	188	1.42 (mg) Total	Die Attach	% of Total Weight	0.75	
Zinc	7440-66-6	Lead Frame	0.013	0.025	131	11	JGPSSI (D04)	7440-22-4	82	
Phosphorous	7723-14-0	Lead Frame	0.009	0.016	87			13561-08-5	10	
								54208-63-8	6	
								827-43-0	3	
						Total	100.00			
Various Assembly Sites / Material compilation						0.1898 g Total Mass				
TOTALS:						100.000	189.800	1,000,000		
						14.24 Total (mg)	Chip (Die)	% of Total Weight	7.5	
							7440-21-3	100		
						Total	100.00			
						0.38 (mg) Total	Wire Bond	% of Total Weight	0.2	
						JGPSSI (D02)	7440-57-5	100		
						Total	100.00			
						2.37 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
							7440-31-5	100.00		
						Total	100.00			
						189.800	100.000			

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Compliance with the above EU Directives has been verified via internal design controls, Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports

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Semiconductor Device Type: SS and SI 28 (Lead) SSOP .209" (N2 / ND)

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			182.90 (mg) Total	Mold Compound	% of Total Weight	79.8
				60676-86-0	85.00	
				Trade Secret	6.13	
				Trade Secret	6.13	
				29690-82-2	2.45	
				1333-86-4	0.30	
				Total	100.00	
			24.07 (mg) Total	Lead Frame	% of Total Weight	10.5
				JGPSSI (D01)	95.54	
				7439-89-6	2.35	
				JGPSSI (D04)	1.91	
				7440-22-4	1.91	
				7440-66-6	0.13	
				Part of Alloy	0.08	
				Total	100.00	
			1.72 (mg) Total	Die Attach	% of Total Weight	0.75
				JGPSSI (D04)	82	
				7440-22-4	10	
				13561-08-5	10	
				54208-63-8	6	
				827-43-0	3	
				Total	100.00	
			17.19 Total (mg)	Chip (Die)	% of Total Weight	7.5
				7440-21-3	100	
				Total	100.00	
			0.46 (mg) Total	Wire Bond	% of Total Weight	0.2
				JGPSSI (D02)	100	
				7440-57-5	100	
				Total	100.00	
			2.87 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
				7440-31-5	100.00	
				Total	100.00	
			229.200			100.000

Various Assembly Sites / Material compilation 0.2292 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: TO and ZB 3 (Lead) TO-92 (A2 / AU)

						Termination Base: Alloy 42	RSRC 2	RSRC 5	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	127.31 (mg) Total	Mold Compound	% of Total Weight	62.59						
Silica, vitreous	60676-86-0	Mold Compound	49.571	100.828	495,713	14	60676-86-0	79.20							
Iron	7439-89-6	Lead Frame	14.704	29.908	147,043		29690-82-2	10.00							
Nickel	7440-02-0	Lead Frame	11.550	23.493	115,500		9003-35-4	5.00							
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.583	15.423	75,825		JGPSSI (A01)	3.00							
Epoxy, cresol novolac	29690-82-2	Mold Compound	6.259	12.731	62,590		JGPSSI (B08)	2.50							
Phenol-formaldehyde resin	9003-35-4	Mold Compound	3.130	6.365	31,295		1333-86-4	0.30							
Diantimony Trioxide	1309-64-4	Mold Compound	1.878	3.819	18,777		Total	100.00							
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	1.565	3.183	15,648		55.94 (mg) Total	Lead Frame				% of Total Weight	27.5		
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.460	2.970	14,600		7439-89-6	53.47							
Silver	7440-22-4	Lead Frame + Die Attach	0.819	1.666	8,193		Alloy-non-skin contact	42.00							
Cobalt	7440-48-4	Lead Frame	0.275	0.559	2,750	JGPSSI (D04)	1.91								
Manganese	7439-96-5	Lead Frame	0.220	0.447	2,200	7440-48-4	1.00								
Gold	7440-57-5	Wire Bond	0.200	0.407	2,000	7439-96-5	0.80								
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.401	1,969	7440-44-0	0.50								
Carbon Black	1333-86-4	Mold Compound	0.188	0.382	1,878	7440-21-3	0.30								
Carbon	7440-44-0	Lead Frame	0.138	0.280	1,375	Part of Alloy	0.03								
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	0.236	1,163	Total	100.00								
2,2'-[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.102	0.208	1,020	1.53 (mg) Total	Die Attach	% of Total Weight	0.75						
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.080	394	JGPSSI (D04)	39								
Phosphorous	7723-14-0	Lead Frame	0.007	0.014	69	14808-60-7	26								
TOTALS:						100.000	203.400	1,000.000							
Various Assembly Sites / Material compilation						0.2034 g Total Mass									
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).															
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Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data						Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports									
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						15.26 Total (mg)	Chip (Die)	% of Total Weight	7.5						
							7440-21-3	100							
						Total	100.00								
						0.41 (mg) Total	Wire Bond	% of Total Weight	0.2						
						JGPSSI (D02)	7440-57-5	100							
						Total	100.00								
						2.97 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.46						
							7440-31-5	100.00							
						Total	100.00								
						203.400					100.000				



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Semiconductor Device Type: TO and ZB 3 (Lead) TO-92 (A2 / AU)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	127.31 (mg) Total	Mold Compound	% of Total Weight	62.59		
Silica, vitreous	60676-86-0	Mold Compound	49.571	100.828	495,713	14	60676-86-0	79.20			
Copper	7440-50-8	Lead Frame	26.273	53.439	262,728		29690-82-2	10.00			
Silicon	7440-21-3	Chip (Die)	7.500	15.255	75,000		9003-35-4	5.00			
Epoxy, cresol novolac	29690-82-2	Mold Compound	6.259	12.731	62,590		JGPSSI (A01)	3.00			
Phenol-formaldehyde resin	9003-35-4	Mold Compound	3.130	6.365	31,295		JGPSSI (B08)	2.50			
Diantimony Trioxide	1309-64-4	Mold Compound	1.878	3.819	18,777		68541-56-0	0.30			
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	1.565	3.183	15,648		1333-86-4	0.30			
							Total			100.00	
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.460	2.970	14,600		55.94 (mg) Total	Lead Frame		% of Total Weight	27.5
Silver	7440-22-4	Lead Frame + Die Attach	0.819	1.666	8,193		JGPSSI (D01)	7440-50-8		95.54	10
Iron	7439-89-6	Lead Frame	0.646	1.314	6,463		7439-89-6	2.35			
Gold	7440-57-5	Wire Bond	0.200	0.407	2,000		JGPSSI (D04)	7440-22-4		1.91	
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.401	1,969		7440-66-6	0.13			
Carbon Black	1333-86-4	Mold Compound	0.188	0.382	1,878		Part of Alloy	7723-14-0		0.08	
						Total			100.00		
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.236	1,163	1.53 (mg) Total	Die Attach	% of Total Weight	0.75		
2,2'-(methylenebis(o-phenylenoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.208	1,020	JGPSSI (D04)	7440-22-4	39	10		
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.080	394	14808-60-7	26				
Zinc	7440-66-6	Lead Frame	0.034	0.070	344	13561-08-5	16				
Phosphorous	7723-14-0	Lead Frame	0.023	0.046	227	54208-63-8	14				
						Total				100.00	
Various Assembly Sites / Material compilation						0.2034 g Total Mass					
			TOTALS:	100.000	203.400	1,000,000					
						15.26 Total (mg)	Chip (Die)	% of Total Weight	7.5		
						Total			100.00		
						0.41 (mg) Total	Wire Bond	% of Total Weight	0.2		
						JGPSSI (D02)	7440-57-5	100	10		
						Total				100.00	
						2.97 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.46		
						Total			100.00		
						203.400				100.000	

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Semiconductor Device Type: AB 3 (Lead) TO-220 (F8)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	1176.69 (mg) Total	Mold Compound	% of Total Weight	62.59		
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	44.962	845.280	449,617	10	7631-86-9	71.84	100.00		
Copper	7440-50-8	Lead Frame	26.273	493.929	262,728		9003-35-4	12.02			
Phenol-formaldehyde resin	9003-35-4	Mold Compound	7.521	141.389	75,207		37382-79-9	12.02			
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	7.521	141.389	75,207		JGPSSI (A01)	2.53			
Silicon	7440-21-3	Chip (Die)	7.500	141.000	75,000		JGPSSI (B08)	1.30			
Diantimony Trioxide	1309-64-4	Mold Compound	1.585	29.807	15,855		40039-93-8	0.30			
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.460	27.448	14,600		1333-86-4	0.30			
Silver	7440-22-4	Lead Frame + Die Attach	0.819	15.402	8,193		Total 100.00				
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	0.814	15.297	8,137		517.00 (mg) Total	Lead Frame		% of Total Weight	27.5
Iron	7439-89-6	Lead Frame	0.646	12.150	6,463		10	JGPSSI (D01)		95.54	100.00
Gold	7440-57-5	Wire Bond	0.200	3.760	2,000	7439-89-6		2.35			
Quartz (SiO2)	14808-60-7	Die Attach	0.197	3.702	1,969	JGPSSI (D04)		1.91			
Carbon Black	1333-86-4	Mold Compound	0.188	3.530	1,878	7440-22-4		0.13			
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	2.186	1,163	7440-66-6		0.08			
2,2'-(methylenebis(o-phenylenoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	1.918	1,020	7723-14-0		0.08			
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.740	394	Total 100.00					
Zinc	7440-66-6	Lead Frame	0.034	0.646	344	14.10 (mg) Total	Die Attach	% of Total Weight	0.75		
Phosphorous	7723-14-0	Lead Frame	0.023	0.427	227	10	JGPSSI (D04)	39	100.00		
TOTALS:							100.000	1,880.000		1,000,000	
Various Assembly Sites / Material compilation							1.8800 g Total Mass				
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).											
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						141.00 Total (mg)	Chip (Die)	% of Total Weight	7.5		
						Total 100.00					
						7440-21-3	100	Total 100.00			
						3.76 (mg) Total	Wire Bond	% of Total Weight	0.2		
						JGPSSI (D02)	7440-57-5	100	Total 100.00		
						27.45 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.46		
						Total 100.00					
						7440-31-5	100.00	Total 100.00			
						1,880.000			100.000		



Semiconductor Device Type: AT 5 (Lead) TO-220 (B8)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	1224.26 (mg) Total	Mold Compound	% of Total Weight	62.59	
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	44.962	879.451	449,617	10		7631-86-9	71.84	
Copper	7440-50-8	Lead Frame	26.273	513.896	262,728			9003-35-4	12.02	
Phenol-formaldehyde resin	9003-35-4	Mold Compound	7.521	147.105	75,207			37382-79-9	12.02	
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	7.521	147.105	75,207			JGPSSI (A01)	2.53	
Silicon	7440-21-3	Chip (Die)	7.500	146.700	75,000			JGPSSI (B08)	1.30	
Diantimony Trioxide	1309-64-4	Mold Compound	1.585	31.012	15,855			40039-93-8	1.30	
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.460	28.558	14,600			1333-86-4	0.30	
Silver	7440-22-4	Lead Frame + Die Attach	0.819	16.025	8,193			Total	100.00	
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	0.814	15.915	8,137		537.90 (mg) Total	Lead Frame	% of Total Weight	27.5
Iron	7439-89-6	Lead Frame	0.646	12.641	6,463		10	JGPSSI (D01)	7440-50-8	95.54
Gold	7440-57-5	Wire Bond	0.200	3.912	2,000			7439-89-6	2.35	
Quartz (SiO2)	14808-60-7	Die Attach	0.197	3.852	1,969			JGPSSI (D04)	7440-22-4	1.91
Carbon Black	1333-86-4	Mold Compound	0.188	3.673	1,878			7440-66-6	0.13	
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	2.274	1,163			Part of Alloy	7723-14-0	0.08
2,2'-(methylenebis(o-phenylenoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	1.996	1,020			Total	100.00	
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.770	394	14.67 (mg) Total	Die Attach	% of Total Weight	0.75	
Zinc	7440-66-6	Lead Frame	0.034	0.672	344	10	JGPSSI (D04)	7440-22-4	39	
Phosphorous	7723-14-0	Lead Frame	0.023	0.444	227			14808-60-7	26	
TOTALS:								13561-08-5	16	
Various Assembly Sites / Material compilation								54208-63-8	14	
1.9560 g Total Mass								827-43-0	5	
							Total	100.00		
						146.70 Total (mg)	Chip (Die)	% of Total Weight	7.5	
							7440-21-3	100		
							Total	100.00		
						3.91 (mg) Total	Wire Bond	% of Total Weight	0.2	
							JGPSSI (D02)	7440-57-5	100	
							Total	100.00		
						28.56 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.46	
							7440-31-5	100.00		
							Total	100.00		
						1,956.000			100.000	

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

Termination Base Alloy : Copper Alloy (Cu)			RSRC 2	RSRC 5	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	218.09 (mg) Total	Mold Compound	% of Total Weight	79.8	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	185.379	678,300	17	60676-86-0	85.00		
Copper	7440-50-8	Lead Frame	10.229	27.955	102,286		Trade Secret	8.70		
Silicon	7440-21-3	Chip (Die)	7.500	20.498	75,000		Trade Secret	6.00		
Epoxy Resin	Trade Secret	Mold Compound	6.943	18.974	69,426		1333-86-4	0.30		
Phenolic Resin	Trade Secret	Mold Compound	4.788	13.086	47,880		Total 100.00			
Tin	7440-31-5	Lead Frame + Plating on external leads (pins) - 100% matte tin	1.276	3.488	12,763	28.70 (mg) Total		Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.495	1.354	4,954	14	JGPSSI (D01)	7440-50-8	97.42	
Carbon Black	1333-86-4	Mold Compound	0.239	0.654	2,394		7440-31-5	0.25		
Gold	7440-57-5	Wire Bond	0.200	0.547	2,000		JGPSSI (D04)	7440-22-4	1.91	
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.538	1,969		7440-66-6	0.18		
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.318	1,163		7440-47-3	0.25		
2,2'-(methylenebis(o-phenylenoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.279	1,020	Total 100.00				
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.108	394	2.05 (mg) Total		Die Attach	% of Total Weight	0.75
Chromium	7440-47-3	Lead Frame	0.026	0.072	263	10	Silver	7440-22-4	39	
Zinc	7440-66-6	Lead Frame	0.019	0.052	189		14808-60-7	26		
TOTALS:			100.000	273.300	1,000,000		13561-08-5	16		
Assembly Site: ANAK			0.2733 g Total Mass				54208-63-8	14		
							827-43-0	5		
						Total 100.00				
						20.50 Total (mg)	Chip (Die)	% of Total Weight	7.5	
							7440-21-3	100		
						Total 100.00				
						0.55 (mg) Total	Wire Bond	% of Total Weight	0.2	
						JGPSSI (D02)	7440-57-5	100		
						Total 100.00				
						3.42 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
							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) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3			
				13			218.09 (mg) Total	Mold Compound	% of Total Weight	79.8	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm						
Silica, vitreous	60676-86-0	Mold Compound	67.830	185.379	678,300			60676-86-0	85.00		
Copper	7440-50-8	Lead Frame	9.869	26.973	98,695			Trade Secret	6.13		
Silicon	7440-21-3	Lead Frame + Chip (Die)	7.576	20.706	75,761			Trade Secret	6.13		
Epoxy Resin	Trade Secret	Mold Compound	4.888	13.358	48,878			29690-82-2	2.45		
Phenolic Resin	Trade Secret	Mold Compound	4.888	13.358	48,878			1333-86-4	0.30		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	5.343	19,551			Total	100.00		
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	3.416	12,500			28.70 (mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.495	1.354	4,954			JGPSSI (D01)	7440-50-8	94.00	
Nickel	7440-02-0	Lead Frame	0.336	0.918	3,360			Alloy-non-skin contact	7440-02-0	3.20	
Carbon Black	1333-86-4	Mold Compound	0.239	0.654	2,394			JGPSSI (D04)	7440-22-4	1.91	
Gold	7440-57-5	Wire Bond	0.200	0.547	2,000				7440-21-3	0.73	
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.538	1,969				7439-95-4	0.18	
2,2'-[(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	0.318	1,163			Total	100.00		
2,2'-(methylenebis(o-phenylenoxy)methylene)]bisoxirane	54208-63-8	Die Attach	0.102	0.279	1,020			2.05 (mg) Total	Die Attach	% of Total Weight	0.75
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.108	394			JGPSSI (D04)	7440-22-4	39	
Magnesium	7439-95-4	Lead Frame	0.018	0.050	184				14808-60-7	26	
TOTALS:				100.000	273.300	1,000,000					
Assembly Site: MTAI				0.2733 g Total Mass							
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/52/EC (End-of-Life Vehicles (ELV) Directive).											
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JGPSSI = Japan Green Procurement Survey Standardization Initiative											
				10			20.50 Total (mg)	Chip (Die)	% of Total Weight	7.5	
								7440-21-3	100		
							Total	100.00			
							0.55 (mg) Total	Wire Bond	% of Total Weight	0.2	
							JGPSSI (D02)	7440-57-5	100		
							Total	100.00			
							3.42 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
								7440-31-5	100.00		
							Total	100.00			
							273.300			100.000	



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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
							228.79 (mg) Total	Mold Compound	% of Total Weight	79.8	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm						
Silica, vitreous	60676-86-0	Mold Compound	67.830	194.469	678,300	18	60676-86-0			85.00	
Copper	7440-50-8	Lead Frame	10.229	29.325	102,286		Trade Secret			8.00	
Silicon	7440-21-3	Chip (Die)	7.500	21.503	75,000		Trade Secret			5.50	
Epoxy Resin	Trade Secret	Mold Compound	6.384	18.303	63,840		JGPSSI (B08)			40039-93-8	0.70
Phenolic Resin	Trade Secret	Mold Compound	4.389	12.583	43,890		JGPSSI (A01)			1309-64-4	0.50
Tin	7440-31-5	Lead Frame + Plating on external leads (pins) - 100% matte tin	1.276	3.659	12,763		1333-86-4			0.30	
3,5,3',5'-Tetrabromobisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	0.559	1.602	5,586		Total			100.00	
Silver	7440-22-4	Lead Frame + Die Attach	0.495	1.420	4,954	14	30.10 (mg) Total	Lead Frame	% of Total Weight	10.5	
Diantimony Trioxide	1309-64-4	Mold Compound	0.399	1.144	3,990		JGPSSI (D01)			7440-50-8	97.42
Carbon Black	1333-86-4	Mold Compound	0.239	0.686	2,394		7440-31-5			0.25	
Gold	7440-57-5	Wire Bond	0.200	0.573	2,000		JGPSSI (D04)			7440-22-4	1.91
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.565	1,969		7440-66-6			0.18	
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.333	1,163		7440-47-3			0.25	
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.293	1,020		Total			100.00	
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.113	394	10	2.15 (mg) Total	Die Attach	% of Total Weight	0.75	
Chromium	7440-47-3	Lead Frame	0.026	0.075	263		JGPSSI (D04)			7440-22-4	39
Zinc	7440-66-6	Lead Frame	0.019	0.054	189		14808-60-7			26	
				TOTALS:			100.000			13561-08-5	16
							286.700			54208-63-8	14
										827-43-0	5
										Total	100.00
							21.50 Total (mg)	Chip (Die)	% of Total Weight	7.5	
							7440-21-3			100	
							Total			100.00	
							0.57 (mg) Total	Wire Bond	% of Total Weight	0.2	
							JGPSSI (D02)			7440-57-5	100
							Total			100.00	
							3.58 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
							7440-31-5			100.00	
							Total			100.00	
						286.700				100.000	

Various Assembly Sites / Material compilation 0.2867 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

Termination Base Alloy : Copper Alloy (Cu)				RSRC 2	RSRC 5	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	228.79 (mg) Total	Mold Compound	% of Total Weight	79.8	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	194.469	678,300	17	60676-86-0	85.00		
Copper	7440-50-8	Lead Frame	10.229	29.325	102,286		Trade Secret	8.70		
Silicon	7440-21-3	Chip (Die)	7.500	21.503	75,000		Trade Secret	6.00		
Epoxy Resin	Trade Secret	Mold Compound	6.943	19.904	69,426		1333-86-4	0.30		
Phenolic Resin	Trade Secret	Mold Compound	4.788	13.727	47,880		Total 100.00			
Tin	7440-31-5	Lead Frame + Plating on external leads (pins) - 100% matte tin	1.276	3.659	12,763	30.10 (mg) Total		Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.495	1.420	4,954	14	JGPSSI (D01)	7440-50-8	97.42	
Carbon Black	1333-86-4	Mold Compound	0.239	0.686	2,394		7440-31-5	0.25		
Gold	7440-57-5	Wire Bond	0.200	0.573	2,000		JGPSSI (D04)	7440-22-4	1.91	
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.565	1,969		7440-66-6	0.18		
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.333	1,163		7440-47-3	0.25		
2,2'-(methylenebis(o-phenylenoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.293	1,020	Total 100.00				
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.113	394	2.15 (mg) Total		Die Attach	% of Total Weight	0.75
Chromium	7440-47-3	Lead Frame	0.026	0.075	263	10	JGPSSI (D04)	7440-22-4	39	
Zinc	7440-66-6	Lead Frame	0.019	0.054	189		14808-60-7	26		
TOTALS:								100.00	286.700	1,000,000
Various Assembly Sites / Material compilation								0.2867 g	Total Mass	
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).										
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							21.50 Total (mg)	Chip (Die)	% of Total Weight	7.5
								7440-21-3	100	
							Total 100.00			
							0.57 (mg) Total	Wire Bond	% of Total Weight	0.2
							JGPSSI (D02)	7440-57-5	100	
							Total 100.00			
							3.58 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
								7440-31-5	100.00	
							Total 100.00			
							286.700			100.000



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

Termination Base Alloy : Copper Alloy (Cu)				RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
				228.79 (mg) Total	Mold Compound	% of Total Weight	79.8		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm				
Silica, vitreous	60676-86-0	Mold Compound	67.830	194.469	678,300				
Copper	7440-50-8	Lead Frame	9.869	28.296	98,695				
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.576	21.721	75,761				
Epoxy Resin	Trade Secret	Mold Compound	4.888	14.013	48,878				
Phenolic Resin	Trade Secret	Mold Compound	4.888	14.013	48,878				
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	5.605	19,551				
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	3.584	12,500				
Silver	7440-22-4	Lead Frame + Die Attach	0.495	1.420	4,954				
Nickel	7440-02-0	Lead Frame	0.336	0.963	3,360				
Carbon Black	1333-86-4	Mold Compound	0.239	0.686	2,394				
Gold	7440-57-5	Wire Bond	0.200	0.573	2,000				
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.565	1,969				
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.333	1,163				
2,2'-(methylenebis(o-phenyleneoxymethylene)bisoxirane	54208-63-8	Die Attach	0.102	0.293	1,020				
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.113	394				
Magnesium	7439-95-4	Lead Frame	0.018	0.053	184				
TOTALS:			100.000	286.700	1,000,000				
Various Assembly Sites / Material compilation			0.2867 g Total Mass						
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).									
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Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data					Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports				
JGPSSI = Japan Green Procurement Survey Standardization Initiative									
						30.10 (mg) Total	Lead Frame	% of Total Weight	10.5
						JGPSSI (D01)	7440-50-8	94.00	
						Alloy-non-skin contact	7440-02-0	3.20	
						JGPSSI (D04)	7440-22-4	1.91	
							7440-21-3	0.73	
						JGPSSI (A16)	7439-95-4	0.18	
						Total			100.00
						2.15 (mg) Total	Die Attach	% of Total Weight	0.75
						JGPSSI (D04)	7440-22-4	39	
							14808-60-7	26	
							13561-08-5	16	
							54208-63-8	14	
							827-43-0	5	
						Total			100.00
						21.50 Total (mg)	Chip (Die)	% of Total Weight	7.5
							7440-21-3	100	
						Total			100.00
						0.57 (mg) Total	Wire Bond	% of Total Weight	0.2
						JGPSSI (D02)	7440-57-5	100	
						Total			100.00
						3.58 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
							7440-31-5	100.00	
						Total			100.00
						286.700			100.000



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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	418.15 (mg) Total	Mold Compound	% of Total Weight	79.8					
Epoxy Resin	Trade Secret	Mold Compound	6.943	36.379	69,426	17	60676-86-0	85.00						
Phenolic Resin	Trade Secret	Mold Compound	4.788	25.089	47,880		Trade Secret	8.70						
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.206	394		Trade Secret	6.00						
Zinc	7440-66-6	Lead Frame	0.019	0.099	189		1333-86-4	0.30						
Gold	7440-57-5	Wire Bond	0.200	1.048	2,000		Total 100.00							
Copper	7440-50-8	Lead Frame	10.229	53.598	102,286	55.02 (mg) Total		Lead Frame	% of Total Weight	10.5				
Chromium	7440-47-3	Lead Frame	0.026	0.138	263	14	JGPSSI (D01)	7440-50-8	97.42					
Tin	7440-31-5	Lead Frame + Plating on external leads (pins) - 100% matte tin	1.276	6.688	12,763		7440-31-5	0.25						
Silver	7440-22-4	Lead Frame + Die Attach	0.495	2.596	4,954		JGPSSI (D04)	7440-22-4	1.91					
Silicon	7440-21-3	Chip (Die)	7.500	39.300	75,000		7440-66-6	0.18						
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	355.429	678,300		7440-47-3	0.25						
2,2'-(methylenebis(o-phenyleneoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.535	1,020	Total 100.00								
Quartz (SiO2)	14808-60-7	Die Attach	0.197	1.032	1,969	3.93 (mg) Total		Die Attach	% of Total Weight	0.75				
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.609	1,163	10	JGPSSI (D04)	7440-22-4	39					
Carbon Black	1333-86-4	Mold Compound	0.239	1.254	2,394		14808-60-7	26						
TOTALS:								100.000	524.000			1,000,000		
Various Assembly Sites / Material compilation								0.5240 g Total Mass						
								39.30 Total (mg)				Chip (Die)	% of Total Weight	7.5
								7440-21-3	100					
							Total 100.00							
							1.05 (mg) Total		Wire Bond	% of Total Weight	0.2			
							JGPSSI (D02)	7440-57-5	100					
							Total 100.00							
							6.55 (mg) Total		Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25			
								7440-31-5	100.00					
							Total 100.00							
							524.000		100.000					

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	292.63 (mg) Total	Mold Compound	% of Total Weight	79.8		
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	248.733	678,300	17		60676-86-0	85.00		
Copper	7440-50-8	Lead Frame	10.229	37.508	102,286			Trade Secret	8.70		
Silicon	7440-21-3	Chip (Die)	7.500	27.503	75,000			Trade Secret	6.00		
Epoxy Resin	Trade Secret	Mold Compound	6.943	25.459	69,426			1333-86-4	0.30		
Phenolic Resin	Trade Secret	Mold Compound	4.788	17.558	47,880						
TOTALS:							Total	100.00			
Tin	7440-31-5	Lead Frame + Plating on external leads (pins) - 100% matte tin	1.276	4.680	12,763	14	38.50 (mg) Total	Lead Frame	% of Total Weight	10.5	
Silver	7440-22-4	Lead Frame + Die Attach	0.495	1.817	4,954			JGPSSI (D01)	7440-50-8	97.42	
Carbon Black	1333-86-4	Mold Compound	0.239	0.878	2,394			7440-31-5	0.25		
Gold	7440-57-5	Wire Bond	0.200	0.733	2,000		JGPSSI (D04)	7440-22-4	1.91		
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.722	1,969			7440-66-6	0.18		
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.426	1,163			7440-47-3	0.25		
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.102	0.374	1,020						
TOTALS:							Total	100.00			
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.144	394	10	2.75 (mg) Total	Die Attach	% of Total Weight	0.75	
Chromium	7440-47-3	Lead Frame	0.026	0.096	263			JGPSSI (D04)	7440-22-4	39	
Zinc	7440-66-6	Lead Frame	0.019	0.069	189				14808-60-7	26	
TOTALS:										13561-08-5	16
TOTALS:										54208-63-8	14
TOTALS:									827-43-0	5	
TOTALS:							Total	100.00			
TOTALS:							27.50 Total (mg)	Chip (Die)	% of Total Weight	7.5	
TOTALS:									7440-21-3	100	
TOTALS:							Total	100.00			
TOTALS:							0.73 (mg) Total	Wire Bond	% of Total Weight	0.2	
TOTALS:									JGPSSI (D02)	100	
TOTALS:							Total	100.00			
TOTALS:							4.58 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25	
TOTALS:									7440-31-5	100.00	
TOTALS:							Total	100.00			
TOTALS:						366.700				100.000	

Assembly Site: ANAK 0.3667 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

Termination Base Alloy : Copper Alloy (Cu)						RSRC 2	RSRC 5	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	292.63 (mg) Total		Mold Compound	% of Total Weight	79.8		
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	248.733	678,300	17		60676-86-0	85.00			
Copper	7440-50-8	Lead Frame	10.031	36.785	100,314			Trade Secret	8.70			
Silicon	7440-21-3	Chip (Die)	7.500	27.503	75,000			Trade Secret	6.00			
Epoxy Resin	Trade Secret	Mold Compound	6.943	25.459	69,426			1333-86-4	0.30			
Phenolic Resin	Trade Secret	Mold Compound	4.788	17.558	47,880			Total	100.00			
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	4.584	12,500	10	38.50 (mg) Total		Lead Frame	% of Total Weight	10.5	
Silver	7440-22-4	Lead Frame + Die Attach	0.495	1.817	4,954			JGPSSI (D01)	7440-50-8	95.54		
Iron	7439-89-6	Lead Frame	0.247	0.905	2,468				7439-89-6	2.35		
Carbon Black	1333-86-4	Mold Compound	0.239	0.878	2,394			JGPSSI (D04)	7440-22-4	1.91		
Gold	7440-57-5	Wire Bond	0.200	0.733	2,000				7440-66-6	0.13		
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.722	1,969			Part of Alloy	7723-14-0	0.08		
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	0.426	1,163			Total	100.00			
2,2'-[[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.102	0.374	1,020		2.75 (mg) Total		Die Attach	% of Total Weight		0.75
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.144	394		10	JGPSSI (D04)	7440-22-4	39		
Zinc	7440-66-6	Lead Frame	0.013	0.048	131					14808-60-7		
Phosphorous	7723-14-0	Lead Frame	0.009	0.032	87				13561-08-5	16		
TOTALS:						100.000		366.700	1,000,000			
Various Assembly Sites / Material compilation						0.3667 g Total Mass						
						27.50 Total (mg)		Chip (Die)	% of Total Weight	7.5		
								7440-21-3	100			
								Total	100.00			
						0.73 (mg) Total		Wire Bond	% of Total Weight	0.2		
								JGPSSI (D02)	7440-57-5	100		
								Total	100.00			
						4.58 (mg) Total		Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
								7440-31-5	100.00			
								Total	100.00			
						366.700				100.000		

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			292.63 (mg) Total	Mold Compound	% of Total Weight	79.8
				7631-86-9	71.84	
				9003-35-4	12.02	
				37382-79-9	12.02	
				JGPSSI (A01)	2.53	
				JGPSSI (B08)	1.30	
				1333-86-4	0.30	
			Total			100.00
			38.50 (mg) Total	Lead Frame	% of Total Weight	10.5
				JGPSSI (D01)	94.00	
				Alloy-non-skin contact	3.20	
				JGPSSI (D04)	1.91	
				7440-21-3	0.73	
				JGPSSI (A16)	0.18	
			Total			100.00
			2.75 (mg) Total	Die Attach	% of Total Weight	0.75
				JGPSSI (D04)	39	
				14808-60-7	26	
				13561-08-5	16	
				54208-63-8	14	
				827-43-0	5	
			Total			100.00
			27.50 Total (mg)	Chip (Die)	% of Total Weight	7.5
				7440-21-3	100	
			Total			100.00
			0.73 (mg) Total	Wire Bond	% of Total Weight	0.2
				JGPSSI (D02)	100	
			Total			100.00
			4.58 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
				7440-31-5	100.00	
			Total			100.00
			366.700			100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	210.209	573.246
Copper	7440-50-8	Lead Frame	9.869	36.191	98.695
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	35.161	95.886
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	35.161	95.886
Silicon	7440-21-3	Lead Frame + Chip (Die)	7.576	27.782	75.761
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	7.413	20.214
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	4.584	12.500
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	3.804	10.374
Silver	7440-22-4	Lead Frame + Die Attach	0.495	1.817	4.954
Nickel	7440-02-0	Lead Frame	0.336	1.232	3.360
Carbon Black	1333-86-4	Mold Compound	0.239	0.878	2.394
Gold	7440-57-5	Wire Bond	0.200	0.733	2.000
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.722	1.969
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.116	0.426	1.163
2,2'-[[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.102	0.374	1.020
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.144	0.394
Magnesium	7439-95-4	Lead Frame	0.018	0.067	0.184
TOTALS:			100.000	366.700	1,000,000

Assembly Site: CARSEM 0.3667 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: PF 80 (Lead) TQFP 14x14mm (X3/XE)

				Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	420.55 (mg) Total	Mold Compound	% of Total Weight	79.8	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	357.464	678,300	17	60676-86-0	85.00		
Copper	7440-50-8	Lead Frame	10.229	53.905	102,286		Trade Secret	8.70		
Silicon	7440-21-3	Chip (Die)	7.500	39.525	75,000		Trade Secret	6.00		
Epoxy Resin	Trade Secret	Mold Compound	6.943	36.588	69,426		1333-86-4	0.30		
Phenolic Resin	Trade Secret	Mold Compound	4.788	25.233	47,880		Total 100.00			
Tin	7440-31-5	Lead Frame + Plating on external leads (pins) - 100% matte tin	1.276	6.726	12,763	55.34 (mg) Total		Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame + Die Attach	0.815	4.295	8,150	14	JGPSSI (D01)	7440-50-8	97.42	
Carbon Black	1333-86-4	Mold Compound	0.239	1.262	2,394		7440-31-5	0.25		
Gold	7440-57-5	Wire Bond	0.200	1.054	2,000		JGPSSI (D04)	7440-22-4	1.91	
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.075	0.395	750		7440-66-6	0.18		
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.041	0.217	413		7440-47-3	0.25		
Chromium	7440-47-3	Lead Frame	0.026	0.138	263	Total 100.00				
Zinc	7440-66-6	Lead Frame	0.019	0.100	189	3.95 (mg) Total		Die Attach	% of Total Weight	0.75
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.099	188	11	JGPSSI (D04)	7440-22-4	82	
			TOTALS: 100.000 527.000 1,000,000				13561-08-5	10		
							54208-63-8	6		
							827-43-0	3		
						Total 100.00				
Assembly Site: ANAP 0.5270 g Total Mass						39.53 Total (mg)		Chip (Die)	% of Total Weight	7.5
								7440-21-3	100	
						Total 100.00				
						1.05 (mg) Total		Wire Bond	% of Total Weight	0.2
								JGPSSI (D02)	7440-57-5	100
						Total 100.00				
						6.59 (mg) Total		Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
								7440-31-5	100.00	
						Total 100.00				
						527.000				100.000

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: ST 8 (Lead) TSSOP 4.4mm (C5 / CN / A4)

Termination Base Alloy : Copper Alloy (Cu)				RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
				26.89 (mg) Total	Mold Compound	% of Total Weight	79.8		
				7631-86-9	71.84				
				9003-35-4	12.02				
				37382-79-9	12.02				
				JGPSSI (A01)	2.53				
				JGPSSI (B08)	1.30				
				1333-86-4	0.30				
				Total		100.00			
				3.54 (mg) Total	Lead Frame	% of Total Weight	10.5		
				JGPSSI (D01)	94.00				
				Alloy-non-skin contact	3.20				
				JGPSSI (D04)	1.91				
				7440-21-3	0.73				
				JGPSSI (A16)	0.18				
				Total		100.00			
				0.25 (mg) Total	Die Attach	% of Total Weight	0.75		
				JGPSSI (D04)	82				
				13561-08-5	10				
				54208-63-8	6				
				827-43-0	3				
				Total		100.00			
				2.53 Total (mg)	Chip (Die)	% of Total Weight	7.5		
				7440-21-3	100				
				Total		100.00			
				0.07 (mg) Total	Wire Bond	% of Total Weight	0.2		
				JGPSSI (D02)	100				
				Total		100.00			
				0.42 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25		
				7440-31-5	100.00				
				Total		100.00			
				33.700				100.000	

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	19.318	573,246
Copper	7440-50-8	Lead Frame	9.869	3.326	98,695
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	3.231	95,886
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	3.231	95,886
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.576	2.553	75,761
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	0.681	20,214
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.421	12,500
3,5,3',5'-Tetrabrombisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	0.350	10,374
Silver	7440-22-4	Lead Frame + Die Attach	0.815	0.275	8,150
Nickel	7440-02-0	Lead Frame	0.336	0.113	3,360
Carbon Black	1333-86-4	Mold Compound	0.239	0.081	2,394
Gold	7440-57-5	Wire Bond	0.200	0.067	2,000
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.075	0.025	750
2,2'-(methylenebis(o-phenylenoxymethylene))bisoxirane	54208-63-8	Die Attach	0.041	0.014	413
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.006	188
Magnesium	7439-95-4	Lead Frame	0.018	0.006	184
TOTALS:			100.000	33.700	1,000,000

Various Assembly Sites / Material compilation 0.0337 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

Microchip's corporate Certificate of RoHS Compliance for all of its Pb-free semiconductor devices is published on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Certificate of RoHS Compliance

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.

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data. Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports

JGPSSI = Japan Green Procurement Survey Standardization Initiative



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Semiconductor Device Type: STH 8 (Lead) TSSOP 4.4mm (AY)


Termination Base Alloy : Copper Alloy (Cu)			RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3	
TOTALS:			100.000	33.700	1,000,000		
Various Assembly Sites / Material compilation			0.0337 g Total Mass				
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).							
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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.							
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data							
JGPSSI = Japan Green Procurement Survey Standardization Initiative							
Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports							
			26.89 (mg) Total				79.8
					Mold Compound	% of Total Weight	
					60676-86-0	85.00	
					Trade Secret	6.13	
					Trade Secret	6.13	
					29690-82-2	2.45	
					1333-86-4	0.30	
					Total	100.00	
					3.54 (mg) Total	10.5	
					Lead Frame	% of Total Weight	
					JGPSSI (D01)	94.00	
					Alloy-non-skin contact	3.20	
					JGPSSI (D04)	1.91	
					7440-21-3	0.73	
					JGPSSI (A16)	0.18	
					Total	100.00	
					0.25 (mg) Total	0.75	
					Die Attach	% of Total Weight	
					JGPSSI (D04)	82	
					Trade Secret	9	
					Trade Secret	5	
					Trade Secret	5	
					Total	100.00	
					2.53 Total (mg)	7.5	
					Chip (Die)	% of Total Weight	
					7440-21-3	100	
					Total	100.00	
					0.07 (mg) Total	0.2	
					Wire Bond	% of Total Weight	
					JGPSSI (D02)	100	
					Total	100.00	
					0.42 (mg) Total	1.25	
					Plating on external leads (pins) - 100% matte tin	% of Total Weight	
					7440-31-5	100.00	
					Total	100.00	
					33.700	100.000	



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Semiconductor Device Type: ST 8 (Lead TSSOP 4.4mm (C5 / CN / A4)

Termination Base Alloy : Copper Alloy (Cu)						RSRC 2	RSRC 5	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	26.89 (mg) Total		Mold Compound	% of Total Weight	79.8		
Silica, vitreous	60676-86-0	Mold Compound	60.010	20.223	600,096	16		60676-86-0	75.20			
Copper	7440-50-8	Lead Frame	9.869	3.326	98,695			129915-35-1	6.50			
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.576	2.553	75,761			9003-35-4	6.50			
Phenol-formaldehyde resin	9003-35-4	Mold Compound	5.187	1.748	51,870			218163-11-2	5.50			
Epoxy resin, multifunctional	129915-35-1	Mold Compound	5.187	1.748	51,870			JGPSSI (B08)	3.00			
Silicone modified epoxy resin	218163-11-2	Mold Compound	4.389	1.479	43,890			JGPSSI (A01)	3.00			
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	2.394	0.807	23,940			1309-64-4	3.00			
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	0.807	23,940			1333-86-4	0.30			
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.421	12,500			Total	100.00			
Silver	7440-22-4	Lead Frame + Die Attach	0.815	0.275	8,150		11	3.54 (mg) Total			Lead Frame	% of Total Weight
Nickel	7440-02-0	Lead Frame	0.336	0.113	3,360			JGPSSI (D01)	94.00			
Carbon Black	1333-86-4	Mold Compound	0.239	0.081	2,394			Alloy-non-skin contact	3.20			
Gold	7440-57-5	Wire Bond	0.200	0.067	2,000			JGPSSI (D04)	1.91			
2,2'-[[2-(oxiranylmethoxy)-1,3-phenylene]bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.075	0.025	750			JGPSSI (A16)	0.73			
2,2'-[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.041	0.014	413		Total	100.00				
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.006	188	11	0.25 (mg) Total		Die Attach	% of Total Weight	0.75	
Magnesium	7439-95-4	Lead Frame	0.018	0.006	184			JGPSSI (D04)	82			
Various Assembly Sites / Material compilation 0.0337 g Total Mass									13561-08-5	10		
TOTALS: 100.000 33.700 1,000,000									54208-63-8	6		
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).								827-43-0	3			
Microchip's corporate Certificate of RoHS Compliance for all of its Pb-free semiconductor devices is published on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Certificate of RoHS Compliance								Total	100.00			
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.								2.53 Total (mg)		Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data									7440-21-3	100		
Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports								Total	100.00			
JGPSSI = Japan Green Procurement Survey Standardization Initiative								0.07 (mg) Total		Wire Bond	% of Total Weight	0.2
								JGPSSI (D02)	100			
Microchip Technology Inc. 2355 W. Chandler Blvd. Chandler, AZ 85224-6199 USA (480) 792-7200 FAX (480) 792-7277								Total	100.00			
								0.42 (mg) Total		Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
								7440-31-5	100.00			
								Total	100.00			
								33.700		100.000		



ST 14 (Lead) TSSOP 4.4mm (D4 / DH)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silicon Dioxide, chemically prepared	7631-86-9	Mold Compound	57.325	32.274	573,246
Copper	7440-50-8	Lead Frame	9.869	5.557	98,695
Phenol-formaldehyde resin	9003-35-4	Mold Compound	9.589	5.398	95,886
Formaldehyde, polymer with (chloromethyl)oxirane and methylphenol	37382-79-9	Mold Compound	9.589	5.398	95,886
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.576	4.265	75,761
Diantimony Trioxide	1309-64-4	Mold Compound	2.021	1.138	20,214
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.704	12,500
3,5,3',5'-Tetrabromobisphenol A, epichlorhydrin oligimer	40039-93-8	Mold Compound	1.037	0.584	10,374
Silver	7440-22-4	Lead Frame + Die Attach	0.815	0.459	8,150
Nickel	7440-02-0	Lead Frame	0.336	0.189	3,360
Carbon Black	1333-86-4	Mold Compound	0.239	0.135	2,394
Gold	7440-57-5	Wire Bond	0.200	0.113	2,000
2,2'-[(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)]bisoxirane	13561-08-5	Die Attach	0.075	0.042	750
2,2'-[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.041	0.023	413
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.011	188
Magnesium	7439-95-4	Lead Frame	0.018	0.010	184
TOTALS:			100.000	56.300	1,000,000

Various Assembly Sites / Material compilation 0.0563 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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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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JGPSSI = Japan Green Procurement Survey Standardization Initiative



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Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials	JEDEC 97 Product Marking and/or Pkg. Labeling e3																				
			44.93 (mg) Total	Mold Compound	% of Total Weight	79.8																		
			<table border="1"> <tr> <td>7631-86-9</td> <td>71.84</td> </tr> <tr> <td>9003-35-4</td> <td>12.02</td> </tr> <tr> <td>37382-79-9</td> <td>12.02</td> </tr> <tr> <td>JGPSSI (A01)</td> <td>1309-64-4</td> <td>2.53</td> </tr> <tr> <td>JGPSSI (B08)</td> <td>40039-93-8</td> <td>1.30</td> </tr> <tr> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> </tr> </table>				7631-86-9	71.84	9003-35-4	12.02	37382-79-9	12.02	JGPSSI (A01)	1309-64-4	2.53	JGPSSI (B08)	40039-93-8	1.30	1333-86-4	0.30	Total		100.00	
7631-86-9	71.84																							
9003-35-4	12.02																							
37382-79-9	12.02																							
JGPSSI (A01)	1309-64-4	2.53																						
JGPSSI (B08)	40039-93-8	1.30																						
1333-86-4	0.30																							
Total		100.00																						
			5.91 (mg) Total	Lead Frame	% of Total Weight	10.5																		
			<table border="1"> <tr> <td>JGPSSI (D01)</td> <td>7440-50-8</td> <td>94.00</td> </tr> <tr> <td>Alloy-non-skin contact</td> <td>7440-02-0</td> <td>3.20</td> </tr> <tr> <td>JGPSSI (D04)</td> <td>7440-22-4</td> <td>1.91</td> </tr> <tr> <td></td> <td>7440-21-3</td> <td>0.73</td> </tr> <tr> <td>JGPSSI (A16)</td> <td>7439-95-4</td> <td>0.18</td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> </tr> </table>				JGPSSI (D01)	7440-50-8	94.00	Alloy-non-skin contact	7440-02-0	3.20	JGPSSI (D04)	7440-22-4	1.91		7440-21-3	0.73	JGPSSI (A16)	7439-95-4	0.18	Total		100.00
JGPSSI (D01)	7440-50-8	94.00																						
Alloy-non-skin contact	7440-02-0	3.20																						
JGPSSI (D04)	7440-22-4	1.91																						
	7440-21-3	0.73																						
JGPSSI (A16)	7439-95-4	0.18																						
Total		100.00																						
			0.42 (mg) Total	Die Attach	% of Total Weight	0.75																		
			<table border="1"> <tr> <td>JGPSSI (D04)</td> <td>7440-22-4</td> <td>82</td> </tr> <tr> <td></td> <td>13561-08-5</td> <td>10</td> </tr> <tr> <td></td> <td>54208-63-8</td> <td>6</td> </tr> <tr> <td></td> <td>827-43-0</td> <td>3</td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> </tr> </table>				JGPSSI (D04)	7440-22-4	82		13561-08-5	10		54208-63-8	6		827-43-0	3	Total		100.00			
JGPSSI (D04)	7440-22-4	82																						
	13561-08-5	10																						
	54208-63-8	6																						
	827-43-0	3																						
Total		100.00																						
			4.22 Total (mg)	Chip (Die)	% of Total Weight	7.5																		
			<table border="1"> <tr> <td></td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> </tr> </table>					7440-21-3	100	Total		100.00												
	7440-21-3	100																						
Total		100.00																						
			0.11 (mg) Total	Wire Bond	% of Total Weight	0.2																		
			<table border="1"> <tr> <td>JGPSSI (D02)</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> </tr> </table>				JGPSSI (D02)	7440-57-5	100	Total		100.00												
JGPSSI (D02)	7440-57-5	100																						
Total		100.00																						
			0.70 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25																		
			<table border="1"> <tr> <td></td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="2">Total</td> <td>100.00</td> </tr> </table>					7440-31-5	100.00	Total		100.00												
	7440-31-5	100.00																						
Total		100.00																						
			56.300			100.000																		



Semiconductor Device Type: ST 14 (Lead) TSSOP 4.4mm (D4/DH)

						Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	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	44.93 (mg) Total		Mold Compound	% of Total Weight	79.8				
Silica, vitreous	60676-86-0	Mold Compound	60.010	33.785	600,096	16			60676-86-0	75.20				
Copper	7440-50-8	Lead Frame	9.869	5.557	98,695				129915-35-1	6.50				
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.576	4.265	75,761				9003-35-4	6.50				
Phenol-formaldehyde resin	9003-35-4	Mold Compound	5.187	2.920	51,870				218163-11-2	5.50				
Epoxy resin, multifunctional	129915-35-1	Mold Compound	5.187	2.920	51,870				JGPSSI (B08)	68541-56-0	3.00			
Silicone modified epoxy resin	218163-11-2	Mold Compound	4.389	2.471	43,890				JGPSSI (A01)	1309-64-4	3.00			
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	2.394	1.348	23,940				1333-86-4	0.30				
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	1.348	23,940				Total		100.00			
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.704	12,500		5.91 (mg) Total		Lead Frame	% of Total Weight	10.5			
Silver	7440-22-4	Lead Frame + Die Attach	0.495	0.279	4,954		11			JGPSSI (D01)	7440-50-8	94.00		
Nickel	7440-02-0	Lead Frame	0.336	0.189	3,360					Alloy-non-skin contact	7440-02-0	3.20		
Carbon Black	1333-86-4	Mold Compound	0.239	0.135	2,394					JGPSSI (D04)	7440-22-4	1.91		
Gold	7440-57-5	Wire Bond	0.200	0.113	2,000					JGPSSI (A16)	7440-21-3	0.73		
Quartz (SiO2)	14808-60-7	Die Attach	0.197	0.111	1,969					JGPSSI (A16)	7439-95-4	0.18		
									Total		100.00			
2,2'-[2-(oxiranymethoxy)-1,3-phenylene]bis(methylene)bisoxirane	13561-08-5	Die Attach	0.116	0.065	1,163		0.42 (mg) Total		Die Attach	% of Total Weight	0.75			
2,2'-[methylenebis(o-phenylenoxymethylene)]bisoxirane	54208-63-8	Die Attach	0.102	0.057	1,020	10			JGPSSI (D04)	7440-22-4	39			
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.039	0.022	394					14808-60-7	26			
Magnesium	7439-95-4	Lead Frame	0.018	0.010	184					13561-08-5	16			
										54208-63-8	14			
										827-43-0	5			
								Total		100.00				
						4.22 Total (mg)		Chip (Die)	% of Total Weight	7.5				
									7440-21-3	100				
								Total		100.00				
						0.11 (mg) Total		Wire Bond	% of Total Weight	0.2				
									JGPSSI (D02)	7440-57-5	100			
								Total		100.00				
						0.70 (mg) Total		Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25				
									7440-31-5	100.00				
								Total		100.00				
						56.300				100.000				

Various Assembly Sites / Material compilation 0.0563 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

Microchip's corporate Certificate of RoHS Compliance for all of its Pb-free semiconductor devices is published on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Certificate of RoHS Compliance

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.

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data. Trace metals analysis is available on Microchip's website: www.microchip.com Products: Pb-Free Information > Pb Free Links: Pb Free Laboratory Analytical Reports

JGPSSI = Japan Green Procurement Survey Standardization Initiative



Microchip Technology Inc. 2355 W. Chandler Blvd. Chandler, AZ 85224-6199 USA (480) 792-7200 FAX (480) 792-7277



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

Termination Base Alloy : Copper Alloy (Cu)	RSRC 2	RSRC 5	Package Homogeneous Materials			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			58.81 (mg) Total	Mold Compound	% of Total Weight	79.8
			Total			100.00
			7.74 (mg) Total	Lead Frame	% of Total Weight	10.5
			Total			100.00
			0.55 (mg) Total	Die Attach	% of Total Weight	0.75
			Total			100.00
			5.53 Total (mg)	Chip (Die)	% of Total Weight	7.5
			Total			100.00
			0.15 (mg) Total	Wire Bond	% of Total Weight	0.2
			Total			100.00
			0.92 (mg) Total	Plating on external leads (pins) - 100% matte tin	% of Total Weight	1.25
			Total			100.00
			73.700			100.000

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	60.010	44.227	600,098
Copper	7440-50-8	Lead Frame	9.869	7.274	98,695
Silicon	7440-21-3	Chip (Die) + Lead Frame	7.576	5.584	75,761
Phenol-formaldehyde resin	9003-35-4	Mold Compound	5.187	3.823	51,870
Epoxy resin, multifunctional	129915-35-1	Mold Compound	5.187	3.823	51,870
Silicone modified epoxy resin	218163-11-2	Mold Compound	4.389	3.235	43,890
Formaldehyde, polymer with bromophenol and (chloromethyl)oxirane	68541-56-0	Mold Compound	2.394	1.764	23,940
Diantimony Trioxide	1309-64-4	Mold Compound	2.394	1.764	23,940
Tin	7440-31-5	Plating on external leads (pins) - 100% matte tin	1.250	0.921	12,500
Silver	7440-22-4	Lead Frame + Die Attach	0.815	0.601	8,150
Nickel	7440-02-0	Lead Frame	0.336	0.248	3,360
Carbon Black	1333-86-4	Mold Compound	0.239	0.176	2,394
Gold	7440-57-5	Wire Bond	0.200	0.147	2,000
2,2'-(2-(oxiranylmethoxy)-1,3-phenylene)bis(methylene)bisoxirane	13561-08-5	Die Attach	0.075	0.055	750
2,2'-(methylenebis(o-phenylenoxymethylene)bisoxirane	54208-63-8	Die Attach	0.041	0.030	413
4-methyl-2-phenyl-1H-imidazole	827-43-0	Die Attach	0.019	0.014	188
Magnesium	7439-95-4	Lead Frame	0.018	0.014	184
TOTALS:			100.000	73.700	1,000,000

Various Assembly Sites / Material compilation 0.0737 g Total Mass
 This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) and with EU Directive 2002/525/EC (End-of-Life Vehicles (ELV) Directive).

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