IC & Module Certificate of Compliance

July 9, 2020

IC Semiconductors and Module Packaged Products

All Microchip IC product packages are designed to be in conformance with EU-RoHS Directive RoHS 2 Amendment - Directive 2015/863/EU / "RoHS 3". Microchip certifies, to the best of its knowledge and understanding, its IC semiconductor and module products, are RoHS compliant and do not contain greater than: Lead (0,1%), Mercury (0,1%), Cadmium (0,01%), Hexavalent chromium (0,1%) Polybrominated biphenyls (PBB) (0,1%) Polybrominated diphenyl ethers (PBDE) including Deca-BDE or pentaBDE or octaBDE (0,1%), Bis(2-ethylhexyl) phthalate (DEHP) (0,1%), Butyl benzyl phthalate (BBP)(0,1%), Dibutyl phthalate (DBP) (0,1%), Diisobutyl phthalate (DIBP) (0,1%) and Hexabromocyclododecane[1] (HBCDD) (0,1%).

EU Exempted Packages

Attachment “A” identifies IC package types that use EU RoHS Exemptions.

One can recognize products with High Temp Pb/Soft Solder Die Attach by the ‘W’ within the part number. Example: MIC2954-02WS or MIC2937A-3.3WU. Part numbers with a temperature code of "W" within the part number indicates “RoHS Compliant using exemption 7a”.

Microsemi/Microchip part numbers which have an "e3" suffix are RoHS compliant. The "e3" is a JESD97 marking standard for tin plate which is matte tin over nickel plate plus a 150C anneal. Plating thickness is in the 300 to 500µin (microinches) range with a 50µin to 300µin nickel sub-plate. All non "e3" suffix part numbers are not RoHS compliant.

We do claim the legal RoHS exemptions for PbO commonly used in glass and some ceramics, as well as the thin Pb braze alloy, required to bond chips to their headers. These are included via RoHS 7(a) and RoHS 7(c)-I exemptions.

Microchip began working with an electronic industry consortium in June 2013 for extending the listed exemptions beyond the current expiration date. This working group has submited a renewal application to the European RoHS Technical Commission. Additional information concerning the status of exemptions requests can be found at: https://ec.europa.eu/environment/waste/rohs_eee/studies_rohs1_en.htm

China RoHS

China’s Environmentally Friendly Use Period (EFUP), logo 1  , applies when these plastic packaged pins finished semiconductor devices are shipped to the People’s Republic of China. Logo 1 appears on the inner and outer shipping boxes. These packaged products are “RoHS - 6 of 6” complaint. Environmentally Friendly Use Period (EFUP) logo 2  , and the associated declaration chart below applies when *SnPb plated products* are shipped to the People’s Republic of China. Logo 2 and chart below appear on the shipping boxes.

表二 有毒有害物质或元素名称及含量标识样式
(Toxic Species or Toxic Element Name and Content Symbol)

部件名称 (Name of Part)	有毒有害物质或元素 (Toxic Species or Element)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
	X	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T 11363-2006规定的限量要求以下
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T 11363-2006规定的限量要求
本产品仅于外部电子管脚部位含有锡镀层
Use only in accordance with Microchip Technology Incorporated’ s Technical Data Sheet for this product family.
Microchip鼓励并建议客户将本产品依据所在地的相关法令，进行贵金属的回收及再利用。切勿随意与一般垃圾丢弃
Microchip Technology Incorporated encourages customers to recycle this product for precious metal value in accordance with local laws. Do not throw in trash.

[1] On March 2, 2016, Commission Regulation (EU) 2016/293 was published to amend Regulation (EC) No 850/2004 on persistent organic pollutants (POP). The amendment added hexabromocyclododecane (HBCDD) to Annex I in POP regulation.

Microchip Technology Incorporated 2355 West Chandler Blvd. Chandler, AZ 85224-6199 Main Office 480-792-7200 Fax 480-792-4005

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SnPb Solder IC Semiconductors

Customers must specifically place custom orders for SnPb solder-plated packaged semiconductor products.

Substances of Concern:

Effective 1 July 2009, all of Microchip Semiconductor products became qualified as Halogen-Free as defined per IEC 61249-2-21:2003: Bromine (Br) ≤ 900 and Chlorine (Cl) ≤ 900 ppm by homogeneous material weight. With total Bromine (Br) plus Chlorine (Cl) content ≤ 1,500 ppm by homogeneous material weight. Additionally, Antimony Trioxide (Sb_2O_3) is also restricted to less than 1,000 ppm.

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.

Microchip Development Systems kits/boards, and RF, Bluetooth, and Touch Screen modules do not meet the requirements of IEC 61249-2-21:2003 listed above.

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

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

Each occurrence is compliant with the EU RoHS 2 Amendment -Directive 2015/863/EU. Please consult the specific Material Content Declaration (MCD) for the estimated substance content.

Stockholm Convention and (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Microchip Technology's IC products meet the requirements of the Stockholm Convention, Montreal Protocol EC No. 2037/2000 and are compliant Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants and with Regulation (EU) 2015/2030, which amends Annex I of Regulation (EC) No 850/2004 on persistent organic pollutants (POPs), regarding the prohibition of short-chain chlorinated paraffins (SCCPs, C10-C13 chloroalkanes) and Regulation (EU) 2016/293 which was published to amend Regulation (EC) No 850/2004 on persistent organic pollutants (POP). A few of Microchip's legacy products require usage of a photoresist or anti-reflective coatings which is exempted for semiconductor manufacturing.

Polycyclic Aromatic Hydrocarbons (PAHs)

To the best of our knowledge as of the date of this statement, Microchip Technology's products comply with all National and International legislation relating to Polycyclic Aromatic Hydrocarbons (PAHs). Microchip Technology does not manufacture or sell any products in which PAHs are an intentionally added material ingredient. Microchip Technology does manufacture certain products which contain carbon black (used in certain plastics) which may contain trace levels of PAHs as a by-product of the carbon black manufacturing process. The trace PAHs are tightly bound to the carbon black surface which is then firmly bound into the polymer matrix and so are not "bio-available".

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China VOC regulations

To the best of our current knowledge and understanding Microchip's IC products and associated packing materials are not subject to VOC regulation: GB 30981-2020: Limit of harmful substances of industrial protective coatings / GB 33372-2020: Limit of volatile organic compounds content in adhesive / GB 38507-2020: Limits of volatile organic compounds (VOCs) in printing ink / GB 38508-2020: Limits for volatile organic compounds content in cleaning agents.

Rare Earth Metals

Microchip semiconductor products and modules do not contain or use any of the seventeen rare earth metals. However, Microchip does use Cerium oxide CMP slurry and Yttrium process kits during wafer/die manufacturing. Our suppliers for each product have taken steps to mitigate possible supply reduction or interruption. Each has no anticipation of shortages for these production materials.

Microchip does not know whether there will be a shortage of rare earth materials triggered by the ongoing trade negotiations. Nor do we know what actions may be triggered as part of these trade negotiations. News reports are speculative at best. With that as background, our assessment as of the date of this statement, Microchip anticipates no direct impact from any rare earth material supply reduction or interruption which may be a consequence from the ongoing trade negotiations.

Packing Materials

To the best of our current knowledge and belief all product(s) shipment material(s) are compliant with Directive 2013/2/EU (Amending to EU 94/62/EC: Packaging and Packaging Waste and EU Directive) Dimethyl Fumarate[2] CAS # 624-49-7 and Einecs No 210-849-0 are not used and are not present in our products. Additionally, it is not used in the moisture absorbent pillows accompanying Microchip products. This information is provided based on reasonable inquiry of our suppliers and represents our current knowledge based on the information provided by our suppliers.

Ozone Depleting Materials (Regulation (EC)1005/2009, as amended by Regulation (EC)744/2010

Microchip Technology Incorporated's semiconductor devices neither contain nor are manufactured with Class I or Class II Ozone Depleting Chemicals ("ODCs"). For purposes of this document "ODCs" are those substances listed in Internal Revenue Code ("IRC") §§ 4681 and 4682 and Treas. Reg. § 52.4682-3(e)(2), this letter documents the "ODC weight" as defined in Treas. Reg. § 52.4682-3(d) of the products, components, and other electronic goods supplied.

Implementation of Copper Wire Bond

Copper Palladium (Gold or Silver) [CuPd or CuPdAu or CuPdAg] wire provides superior performance over Gold (Au) bonding wire. CuPd(Au/Ag) wire helps ensure a steady supply of components that can support our customers ongoing business and technology requirements. It is Microchip's intent to convert applicable products from gold (Au) to copper-based (Cu) bonding wire materials. This switching of wire bond materials does not change the environmental or material compliance or reporting category of any IC product and all posted IMDS/MCDs remain valid and in production. An MCD is only a representative sample of qualified production.

EU Waste of Electrical and Electronic Equipment (WEEE) and Basel Convention

Microchip IC products and its Modules are classified as piece parts which are not classified as EEE under EU WEEE (Waste of Electrical and Electronic Equipment) or the Basel Convention.

[2] European Commission Directive 2009/251/EC of 17 March 2009 regarding DMF

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Australian Customs Asbestos Declaration

With reference to the Customs (Prohibited Imports) Regulations 1956 and Section 4 of the Hazardous Waste (Regulation of Exports and Imports) Act 1989 (HW Act) and to the best of Microchip Technology Incorporated current knowledge and belief, Assurances that imported goods, IC products, do not contain asbestos, all forms: 1332-21-4 (Asbestos); 12172-67-7 (Ferroactinolite asbestos); 17068-78-9 (Anthophyllite asbestos); 12172-73-5 (Amosite asbestos); 12001-29-5 (Chrysotile asbestos); 12001-28-4 (Crocidolite asbestos); 14567-73-8 (Tremolite asbestos)

California's Proposition 65

California's Proposition 65 entitles California consumers to special warnings for products that contain chemicals known to the state of California to cause cancer and birth defects or other reproductive harm if those products expose consumers to such chemicals above certain threshold levels.

This document certifies that to the best of our current knowledge and belief and under normal usage, Microchip's IC semiconductor and module products are in compliance with California Proposition 65 – The Safe Drinking Water and Toxic Enforcement Act, 1986). Although some of our products contain lead there is no risk of exposure, such as contact with food/drink or inhalation. Microchip's IC semiconductor and module products contain No Significant Risk Levels (NSRLs) for cancer-causing chemicals and are below the Maximum Allowable Dose Levels (MADLs) for chemicals causing reproductive toxicity. Therefore, a warning label that our product(s) contains compounds that may cause cancer, birth defects, or reproductive harm is not required.

However, during destructive decomposition, our products may contain and release trace amounts of lead (Pb), Arsenic (As), Beryllium (Be); Nickel (Ni); substances listed as chemicals known to the State of California to cause cancer and/or birth defects or other reproductive harm. To reduce risk of exposure, work with approved safety equipment in a well-ventilated area, wear dust masks that are specially designed to filter out microscopic particles, wear protective gloves and wash hands after handling. For more information go to www.P65Warnings.ca.gov

Disposal

Products at the end of their life, as well as any scrap, must be disposed following all local and national legal regulating provisions.

Microchip Technology Incorporated's General Statement of Warranty

Microchip Technology Incorporated has taken commercially reasonable steps to provide representative and accurate material content information. Microchip relies on information provided by third parties and may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontractor assemblers and raw material suppliers. Microchip may update this Certificate of Compliance from time to time by posting the updated Certificate of Compliance on its website. Microchip does not provide any warranty, express or implied, with respect to the information provided in this Certificate of Compliance. This Certificate of Compliance does not modify Microchip's terms and conditions of sale of its products or the terms of any agreement under which customers purchased Microchip's products. Microchip's terms and conditions of sale or the relevant agreement, as applicable, shall continue to apply.

Mathew B. Bunker
Senior Vice President, Backend Operations
Microchip Technology Inc.
2355 W. Chandler Blvd., Chandler, AZ 85224

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Attachment "A"

Table identifies IC package types that use EU-RoHS Exemptions:

Microchip Package Code	Package Description	Package Type	Pin Count	Package Width or Size	External Solder Composition (Terminal Finish)	EU RoHS Exemption[3]
9KA	Transistor Outline	TO-263	3	-	Matte Tin	7a Expires: 21 July 2021
9HA	Transistor Outline	TO-263	7	-	Matte Tin	7a Expires: 21 July 2021
F9X	Ceramic Dual-In-Line-Pkg glass seal	CERDIP	8	.300in	SAC	7c-I Expires: 21 July 2021
5NB	Ceramic Dual Inline Package	CERDIP	8	.600In	NiAu	7c-I Expires: 21 July 2021
ZEX	System In Package	SiP	8	22x27x12mm	SAC	7a, 7c-I Expires: 21 July 2021
ZFX	System In Package	SiP	8	22x39.5x12.5mm	SAC	7a, 7c-I Expires: 21 July 2021
ZGX	System In Package	SiP	8	22x39x12.5mm	SAC	7a, 7c-I Expires: 21 July 2021
ESX	High-Power Dual Flatpack No-Lead	PDFN	8	3.3x3.3x0.9mm	Matte Tin	7a Expires: 21 July 2021
ASX	High-Power Dual Flatpack No-Lead	PDFN	8	5x6x0.9mm	Matte Tin	7a Expires: 21 July 2021
VDX	PBC Module With Shield	MODULE	12	17.78x27.94mm	Au Flash	7c-I Expires: 21 July 2021
5PB	Ceramic Dual Inline Package	CERDIP	18	.300In	NiAu	7c-I Expires: 21 July 2021
8ZB	Ceramic Dual Inline Package	CERDIP	18	22.19x26.08x2.75mm	NiAu	7c-I Expires: 21 July 2021
8QB	Ceramic Dual Inline Package	CERDIP	24	.600In	NiAu	7c-I Expires: 21 July 2021
4YX	PCB Module	MODULE	25	12.7x11mm	Au	7c-I Expires: 21 July 2021
5QB	Ceramic Dual Inline Package	CERDIP	28	.300In	NiAu	7c-I Expires: 21 July 2021
5RB	Ceramic Dual Inline Package	CERDIP	28	.600In	NiAu	7c-I Expires: 21 July 2021

[3] all the package codes using exemption 15 are no longer produced and are listed for historical reference only.

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Microchip Package Code	Package Description	Package Type	Pin Count	Package Width or Size	External Solder Composition (Terminal Finish)	EU RoHS Exemption[3]
5SB	Ceramic Dual Inline Package	CERDIP	32	.400In	NiAu	7c-I Expires: 21 July 2021
DEB	Ceramic Quad Flatpack	CQFP	32	20.8x10.4x3mm	NiAu	7a, 7c-I Expires: 21 July 2021
9SB	Ceramic Dual Inline Package	CERDIP	32	40.64x10.03x2.84mm	NiAu	7c-I Expires: 21 July 2021
5JB	Ceramic Dual Flat Pack	CDFP	36	12.19x23.37x2.97mm	NiAu	7c-I Expires: 21 July 2021
5TB	Ceramic Dual Inline Package	CERDIP	40	.600In	NiAu	7c-I Expires: 21 July 2021
W5X	J-Leaded Ceramic Chip Carrier	JLCC	68	.950x.950in	Au Flash	7c-I Expires: 21 July 2021
W4X	J-Leaded CERQUAD 'Cerpac' glass seal	CERQUAD	68	.950x.950in	NiPdAu	7c-I Expires: 21 July 2021
WPX	J-Lead CERQUAD WINDOWED	CERQUAD	68	.950x.950in	NiPdAu	7c-I Expires: 21 July 2021
4EC	FlipChip Ceramic Ball Grid Array	FCCBGA	69	10x10mm	SAC405	15(a) Expires: 21 July 2021
4GC	FlipChip Ceramic Ball Grid Array	FCCBGA	69	8x8mm	SAC405	15(a) Expires: 21 July 2021
X5X	J-Leaded CERQUAD 'Cerpac' glass seal	CERQUAD	84	1.15x1.15in	NiPdAu	7c-I Expires: 21 July 2021
XHX	J-Lead CERQUAD	CERQUAD	84	1.15x1.15in	NiPdAu	7c-I Expires: 21 July 2021
2GC	FlipChip Chip Scale Package	FCCSP	121	12x12mm	SAC305	15(a) Expires: 21 July 2021
LXB	PCB Module	MODULE	188	40.8x40.8x3.3mm	NiAu	7a, 7c-I Expires: 21 July 2021
2SC	FlipChip Chip Scale Package	FCCSP	196	15x15mm	SAC305	15(a) Expires: 21 July 2021
4YC	FlipChip Ball Grid Array	FCBGA	196	15x15mm	SAC305	15(a) Expires: 21 July 2021
DFB	CERAMIC QUAD FLAT PACK	CQFP	256	36x36x4.03mm	NiAu	7a, 7c-I Expires: 21 July 2021
3JC	Heat Spreader FlipChip BGA	HFCBGA	324	19x19mm	SAC305	15(a) Expires: 21 July 2021

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Microchip Package Code	Package Description	Package Type	Pin Count	Package Width or Size	External Solder Composition (Terminal Finish)	EU RoHS Exemption[3]
9QB	Ceramic Land Grid Array	CLGA	349	25x25x2.96mm	NiAu	7a, 7c-I Expires: 21 July 2021
WMB	Ceramic Land Grid Array	CLGA	349	25x25x2.96mm	NiAu	7a, 7c-I Expires: 21 July 2021
8WB	Ceramic Land Grid Array	CLGA	472	22x22x2.96mm	NiAu	7a, 7c-I Expires: 21 July 2021
8UB	Ceramic Land Grid Array	CLGA	472	29x29x1.27mm	NiAu	7a, 7c-I Expires: 21 July 2021
X3B	Ceramic Land Grid Array	CLGA	472	29X29X2.73mm	NiAu	7a, 7c-I Expires: 21 July 2021
X4B	Ceramic Land Grid Array	CLGA	472	29X29X2.77mm	NiAu	7a, 7c-I Expires: 21 July 2021
4DB	Ceramic Land Grid Array	CLGA	472	29x29x3.09mm	NiAu	7a, 7c-I Expires: 21 July 2021
5ZB	Ceramic Land Grid Array	CLGA	472	29x29x3.09mm	NiAu	7a, 7c-I Expires: 21 July 2021
8XB	Ceramic Land Grid Array	CLGA	472	29x29x3.09mm	NiAu	7a, 7c-I Expires: 21 July 2021
9RB	Ceramic Land Grid Array	CLGA	472	29x29x3.09mm	NiAu	7a, 7c-I Expires: 21 July 2021
X7B	Ceramic Land Grid Array	CLGA	472	29x29x4.03	NiAu	7a, 7c-I Expires: 21 July 2021
3RC	Heat Spreader FlipChip BGA	HFCBGA	484	23x23mm	SAC305	15(a) Expires: 21 July 2021
3WC	Heat Spreader FlipChip BGA	HFCBGA	613	33x33mm	SAC305	15(a) Expires: 21 July 2021
3XC	Heat Spreader FlipChip BGA	HFCBGA	613	33x33mm	SAC305	15(a) Expires: 21 July 2021
9LB	Ceramic Land Grid Array	CLGA	625	29x29x2.52mm	NiAu	7a, 7c-I Expires: 21 July 2021
5WB	Ceramic Land Grid Array	CLGA	625	29x29x2.96mm	NiAu	7a, 7c-I Expires: 21 July 2021
5XB	Ceramic Land Grid Array	CLGA	625	29x29x2.96mm	NiAu	7a, 7c-I Expires: 21 July 2021
5YB	Ceramic Land Grid Array	CLGA	625	29x29x2.96mm	NiAu	7a, 7c-I Expires: 21 July 2021
DDB	Ceramic Land Grid Array	CLGA	625	29x29x2.96mm	NiAu	7a, 7c-I Expires: 21 July 2021
4ZB	Ceramic Land Grid Array	CLGA	625	29x29x3.8mm	NiAu	7a, 7c-I Expires: 21 July 2021
8VB	Ceramic Land Grid Array	CLGA	625	29x29x3.8mm	NiAu	7a, 7c-I Expires: 21 July 2021

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Microchip Package Code	Package Description	Package Type	Pin Count	Package Width or Size	External Solder Composition (Terminal Finish)	EU RoHS Exemption[3]
6AB	Ceramic Land Grid Array	CLGA	625	35x35x7.64mm	NiAu	7a, 7c-I Expires: 21 July 2021
ATC	FlipChip Ball Grid Array	FCBGA	773	23x23mm	SAC305	15(a) Expires: 21 July 2021
BTC	FlipChip Ball Grid Array	FCBGA	773	23x23mm	SAC305	15(a) Expires: 21 July 2021
BVC	FlipChip Ball Grid Array	FCBGA	773	23x23mm	SAC305	15(a) Expires: 21 July 2021
9WC	Heat Spreader Ball Grid Array	HBGA	896	31x31mm	SAC305	15(a) Expires: 21 July 2021
AAC	FlipChip Ball Grid Array	FCBGA	896	31x31mm	SAC305	15(a) Expires: 21 July 2021
ASC	FlipChip Ball Grid Array	FCBGA	896	31x31mm	SAC305	15(a) Expires: 21 July 2021
BCC	FlipChip Ball Grid Array	FCBGA	896	31x31mm	SAC305	15(a) Expires: 21 July 2021
CDC	FlipChip Ball Grid Array	FCBGA	896	31x31mm	SAC305	15(a) Expires: 21 July 2021
D8B	Ceramic Land Grid Array	CLGA	896	31x31x3.8mm	NiAu	7a, 7c-I Expires: 21 July 2021
6DC	FlipChip Ball Grid Array	FCBGA	1022	27x27mm	SAC305	15(a) Expires: 21 July 2021
6FC	Thick Fine Pitch Ball Grid Array	BFBGA	1022	27x27mm	SAC305	7c-I Expires: 21 July 2021
BHC	FlipChip Ball Grid Array	FCBGA	1071	27x27mm	SAC305	15(a) Expires: 21 July 2021
BGC	Fine Pitch Ball Grid Array	FBGA	1071	27x27x2.17mm	SAC305	15(a) Expires: 21 July 2021
2DC	Heat Spreader FlipChip BGA	HFCBGA	1072	45x45mm	SAC305	15(a) Expires: 21 July 2021
BKC	FlipChip Ball Grid Array	FCBGA	1073	27x27mm	SAC305	15(a) Expires: 21 July 2021
BLC	Heat Spreader Thick Fine Pitch Ball Grid Array	HBFBGA	1408	31x31mm	SAC305	15(a) Expires: 21 July 2021
BPC	Thick Ball Grid Array	BBGA	1517	40x40x3.22mm	SAC305	15(a) Expires: 21 July 2021
6BB	Ceramic Land Grid Array	CLGA	1752	45x45x6mm	NiAu	7a, 7c-I Expires: 21 July 2021
6CB	Ceramic Land Grid Array	CLGA	1752	45x45x6mm	NiAu	7a, 7c-I Expires: 21 July 2021
9BB	Ceramic Land Grid Array	CLGA	1752	45x45x6mm	NiAu	7a, 7c-I Expires: 21 July 2021

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Microchip Package Code	Package Description	Package Type	Pin Count	Package Width or Size	External Solder Composition (Terminal Finish)	EU RoHS Exemption[3]
2NC	Heat Spreader FlipChip BGA	HFCBGA	1760	42.5x42.5mm	SAC305	7(c)-I / Expires: 21/07/2021
7KC	Thick Ball Grid Array	BBGA	1932	45x45mm	SAC305	7c-I Expires: 21 July 2021

MSCC FPGA-SoC Packages with Pb ... Not yet integrated

Package Description NOTE: ITEMS IN **BLUE** ARE DISCONTINUED	Package Type	Pin Count	External Solder Composition: (Terminal Finish)
Plastic Ball Grid Array	BG	272 / 329 / 456	Sn63/Pb37
Fine Pitch Ball Grid Array	FG	144 / 256 / 324 / 484 / 676 / 896 / 1152	Sn63/Pb37
Very Fine Pitch Ball Grid Array	VF	256 / 400	Sn63/Pb37
Chip Scale Package	CS	49 / 81 / 121 / 128 / 180 / 196 / 201 / 281 / 288 / 289 / 325	Sn63/Pb37
Fine Pitch Chip Scale Package	FCS	158 / 325 / 536	Sn63/Pb37
Ultra-Thin Chip Scale Package	UC/UCS	36 / 81	Sn63/Pb37
Flip Chip Ball Grid Array	FC	484 / 784 / 1152 / 1657	Sn63/Pb37
Fine Pitch Flip Chip Ball Grid Array	FCV	484	Sn63/Pb37
Ceramic Quad Flat Pack	CQFP	84 / 172	Sn63/Pb37
Ceramic Pin Grid Array	CPGA	84 / 132 / 176 / 207 / 257	Sn63/Pb37
Ceramic Column Grid Array	CCGA	484 / 624 / 896 / 1152 / 1272 / 1657	Sn63/Pb37
Quad Flat Pack	QN	48 / 68 / **100** / **132** / **180**	85%Sn/15%Pb
Plastic Quad Flat Pack	PQ	100 / 144 / 160 / 208 / **240**	85%Sn/15%Pb
Thin Quad Flat Pack	TQ	64 / 100 / 144 / 176	85%Sn/15%Pb
Very Thin Quad Flat Pack	VQ	80 / 100 / 128 / 176	85%Sn/15%Pb
Plastic Leaded Chip Carrier	PL	44 / 68 / 84	85%Sn/15%Pb
Plastic Quad Flat Pack-Exposed Heatsink	RQ	**208** / **240**	85%Sn/15%Pb
Ceramic Quad Flat Pack	CQFP	84 / 132 / 172 / 196 / 208 / 256 / 352	NiAu
Ceramic Pin Grid Array	CPGA	84 / 132 / 176 / 207 / 257	NiAu
Ceramic Land Grid Array	CLGA	484 / 624 / 896 / 1152 / 1272 / 1657	NiAu
Ceramic Chip Carrier Land Grid Array	CCLG	256	NiAu

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