Certificate of Compliance

Semiconductor Devices

October 23, 2012

Plastic Packaged Semiconductors

Effective July 01, 2006, Microchip Technology Incorporated (Microchip) began shipping RoHS compliant semiconductor products to all distributors and customers. Microchip certifies, to the best of its knowledge and understanding, the Matte Tin, Nickel/Palladium/Gold (Ni/Pd/Au) and Tin/Silver/Copper (SAC) plated external pins (leads) of our plastic and Chip Scale Packages (CSP) semiconductor products and modules do not contain the substances listed in the table below in amounts exceeding the Maximum Control Value (MCV)[1]. Our FET/PDFN products and packages utilize EU exemption 7(a) - Pb (lead) in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead).

China Environmental Friendly Use Period (EFUP), logo 1  , applies when these plastic packaged pin 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 considered to be "RoHS - 6 of 6" complaint.

EU RoHS / China RoHS / Korea RoHS **Substances of concern:**	**Maximum Control Value**
Lead	0.10% by weight (1,000 ppm)[2]
Mercury	0.10% by weight (1,000 ppm)
Cadmium	0.01% by weight (100 ppm)
Hexavalent Chromium	0.10% by weight (1,000 ppm)
Polybrominated Biphenyls (PBB)	0.10% by weight (1,000 ppm)
Polybrominated diphenylethers (PBDEs) including Deca-BDE or pentaBDE or octaBDE	0.10% by weight (1,000 ppm)

Plastic Packaged Semiconductors (SnPb)

Microchip certifies, to the best of its knowledge and understanding, that *EXCEPT* for the presence of lead (Pb) in the SnPb solder plating of the external pins (leads), our plastic packaged semiconductor devices with SnPb solder-plated external pins (leads) comply with the other content limitations in European Union Directive 2011/65/EU. Applications that are exempted from the prohibition and listed in ANNEX III may use these devices (see ANNEX III Applications exempted from the restriction in Article 4(1)). Microchip's SnPb solder-plated plastic packaged semiconductor devices are "RoHS – 5 of 6" compliant.

Customers must specifically order SnPb solder-plated pin finished semiconductor products to assure receipt of only Pb (leaded) solder-plated, plastic packaged semiconductor products.

[1] Maximum Control Value (MCV) is defined at the homogeneous material level. A homogeneous material is defined as either a raw material or a material applied during the construction of the product.
[2] FET/PDFN products and packages utilize EU exemption 7(a) - Pb (lead) in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)

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The Environmental Friendly Use Period (EFUP) logo 2 

, and the associated declaration chart below applies when *SnPb plated and Ceramic* products are shipped to the People's Republic of China. The 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	0	0	0	0	0

0: 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.

Ceramic Packaged Semiconductor Products

Based upon information provided by our suppliers, these devices contain Pb (lead) exceeding the Maximum Control Value (MCV) and are not recommended for RoHS required designs. Applications that are exempted from the prohibition and listed in European Union Directive 2011/65/EU may use these devices.

Substances of Concern:

Beginning 1 July 2009 most Microchip production locations were qualified as Halogen-Free as defined per IEC 61249-2-21:2003: Bromine (Br) ≤ 900 and Chlorine (Cl) ≤ 900 ppm by homogeneous material weight. With total Bromine (Br) plus Chlorine (Cl) content ≤ 1,500 ppm by homogeneous material weight. Additionally, Antimony Trioxide (Sb_2O_3) is less than 1,000 ppm.

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

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

Each occurrence is compliant with EU Directive 2011/65/EU. Please consult the specific Material Content Declaration (MCD) for the estimated substance content.

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

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Joint Industry Guide No. JIG-101 Ed. 4.0

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

Rare Earth Metals

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

Packing Materials

To the best of our current knowledge and belief all product(s) shipment materials are compliant with EU Directive 94/62/EC: Packaging and Packaging Waste and EU Directive 2009/251/EC, Restricting Use of Dimethyl Fumarate (DMF).The protective tubes, end plugs and trays, reels and window envelopes used to hold the packing slip on the outer box in which the specific product is shipped may contain polyvinyl chloride (PVC) plastic with a total chorine content of more than 1,000 ppm.

Implementation of copper wire bond

Palladium Copper (PdCu) Wire provides superior performance over (Au) Gold Wire. PdCu wire helps ensure a steady supply of components that can support your ongoing business needs. It is Microchip's intent to convert applicable products within the next 18 to 24 months from gold to palladium copper bonding wire. This switching of wire bond materials does not change the environmental compliance or reporting category of any product.

Microchip Technology Incorporated's General Statement of Warranty

The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgements, and invoices.

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

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