



# MICROCHIP

## Certificate of Compliance

August 27, 2014

### 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)<sup>1</sup>.

Our PDFN packaged type products 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" compliant.

EU RoHS <sup>2</sup> / China RoHS / Korea RoHS Substances of concern:	Maximum Control Value
Lead	0.10% by weight (1,000 ppm) <sup>3</sup>
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)

### Semiconductors (SnPb solder)

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

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.

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.

<sup>1</sup> 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.

<sup>2</sup> EU RoHS (Directive 2011/65/EU 8 JUNE 2011) Restricted Substance RoHS

<sup>3</sup> 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) AS: [08 PDFN 5x6x0.9mm Matte Tin] & ES: [08 PDFN 3.3x3.3x0.9mm Matte Tin]



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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 Semiconductor Products

Based upon information provided by our suppliers, these products 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:

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<sub>2</sub>O<sub>3</sub>) 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.

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

## EU Directive 2006/122/EC of 12 December 2006 regarding PFOS

Microchip Technology's products and manufacturing processes are in compliance with the above referenced Directive restricting the use of perfluorooctane sulfonates (PFOS).

## 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.



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### **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".

### **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<sup>4</sup> 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.

### **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**

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.

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<sup>4</sup> European Commission Directive 2009/251/EC of 17 March 2009 regarding DMF