

RoHS 2002/95/EC Compliance

Directive 2002/95/EG of the European Parliament and of the council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

On January 27, 2003, the European Union has issued a directive to regulate the restriction of the use of certain hazardous substances in electric and electronic equipment. This directive numbered 2002/95/EC (RoHS) and prohibits the use of lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (Cr6), polybromated biphenyl (PBB) and polybromated diphenyl ether (PBDE) in all electric and electronic parts which circulate within the EU after July 1, 2006.

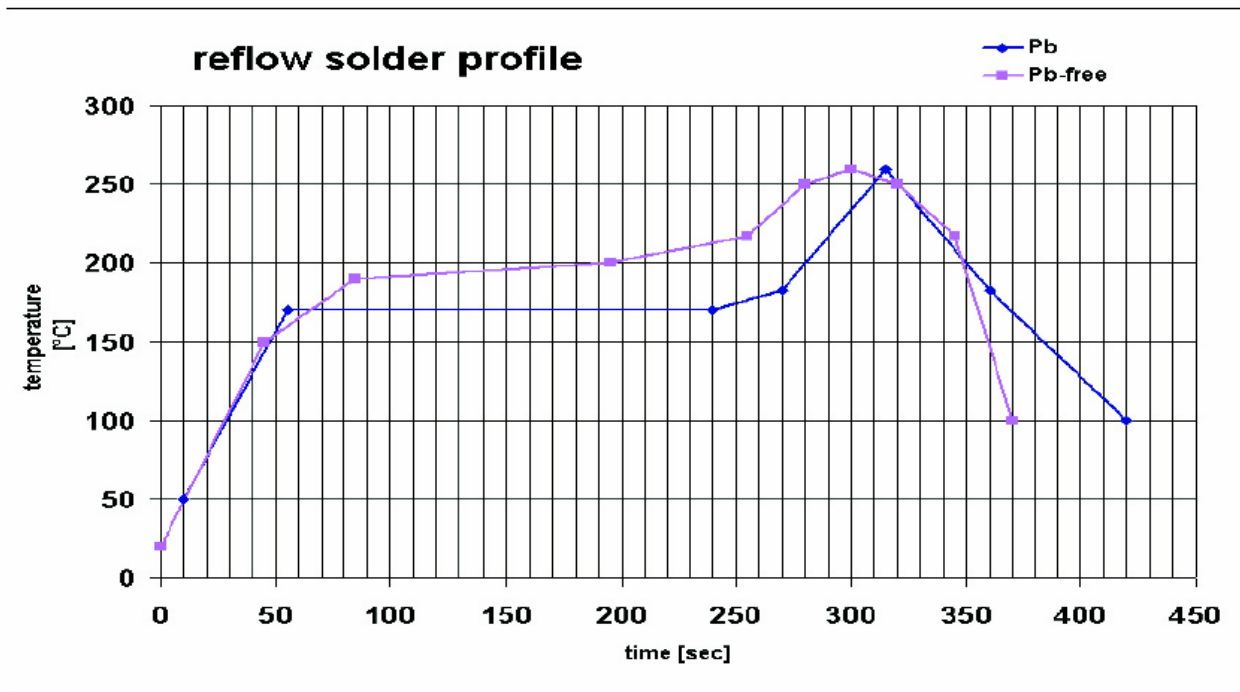
| 2002/95/EG(RoHS) COMPLIANCE | | | |
|---|------------------------------|-----------------------|-------------------------------------|
| Type | 2002/95/EG (RoHS) compliance | Pb-free | Deca BDE, PFOS, PFOA, and HBCD free |
| A-H, A-N, BEK, BRQ, BRM, BRK, BVM, C-N, E-N, IWN, PBH, PBU, PBV, PBW, PL, PLC, PS, PSB, PVG, REG, RUG, R-Z, SMB, SMR, SMV, RTO | Yes, since 01.01.2005 | Yes, since 01.01.2005 | Yes |
| SMT, SMS, SMK, SMP, BRS, BVB, BVH, BVS, BVE, BVR, BVT, LMS, LMP, LMK, LMI, SMH, PMH, PMU, PMB, BKW, BVD, BVM-F, BVO, VLK, VLP, VMI, VMK, VMP, VMS | Yes | Yes | Yes |
| PMA*, PMD* | No | No | Yes |
| Cu-MANGANIN®-Cu shunts | Yes | Yes | Yes |

* There is no plan to change these parts to RoHS compliance. There is no drop-in replacement available.

Solderability

The new (lead-free) components are compatible with SnPb soldering process. However, the following restrictions should be noted: peak max. 260°C, max. 40 seconds over 255°C, max. 90 seconds over 217°C. **See table below.**

| SOLDERING RESTRICTIONS | | | |
|-------------------------------------|------|-----|-----|
| Reflow, wave and infrared soldering | | | |
| Temperature (° C) | 260 | 255 | 217 |
| Time (s) | peak | 40 | 90 |



High Power, Aluminum Clad resistors

| ROHS/WEEE DATA – IRH/IRV/ULH/ULV RESISTORS | | | | | | |
|--|-------------|--------------|----------------------|-------|-----|------|
| Part Name: | Part Type: | | Description: | | | |
| IRH/IRV/ULH/ULV | Resistor | | Wire Wound Resistors | | | |
| | Pb | Cd | Hg | Cr 6+ | PBB | PBDE |
| AL CASE(A6063-T) | 4mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Resistance Wire(FCHW) | 4mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Resistance Wire (CNW) | 11mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Resistance Wire (NCHW) | 20mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Mica (HM-001) | %/Wt. 0.005 | %/Wt. 0.0004 | N/D | N/D | N/D | N/D |
| Mica (HM-111) | 8.2mg/Kg | N/D | N/D | N/D | N/D | N/D |
| SiO2 (#40, #80) | N/D | N/D | N/D | N/D | N/D | N/D |
| Metal Terminal | N/D | N/D | N/D | N/D | N/D | N/D |
| Wire (HRW-B) | 22mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Wire (UL3068) | 22mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Wire (KC) | N/D | N/D | N/D | N/D | N/D | N/D |
| Wire (SRG WIRE) | N/D | N/D | N/D | N/D | N/D | N/D |
| Ceramic(Tube) | N/D | N/D | N/D | N/D | N/D | N/D |
| Ceramic(Base & Road) | 1.32mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Glass Fiber(RS4400-366) | N/D | N/D | N/D | N/D | N/D | N/D |
| Cap(7 diameter) | N/D | N/D | N/D | N/D | N/D | N/D |
| Cap(CP Wire) | N/D | N/D | N/D | N/D | N/D | N/D |
| Silicone(ST2022) | N/D | N/D | N/D | N/D | N/D | N/D |

| ROHS/WEEE DATA – SILICONE IRN/IRF/ULN/ULF AND IRS RESISTORS | | | | | | |
|---|---------------------|--------------|----------------------|---------|---------|---------|
| Part Name: | Part Type: | | Description: | | | |
| IRN/IRF/ULN/ULF AND IRS | Resistor (Silicone) | | Wire Wound Resistors | | | |
| | Pb | Cd | Hg | Cr 6+ | PBB | PBDE |
| AL CASE(A6063-T) | 4mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Resistance Wire(FCHW) | 4mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Resistance Wire (CNW) | 11mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Resistance Wire (NCHW) | 20mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Mica (HM-001) | %/Wt. 0.005 | %/Wt. 0.0004 | N/D | N/D | N/D | N/D |
| Mica (HM-111) | 8.2mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Wire (SRG WIRE) | N/D | N/D | N/D | N/D | N/D | N/D |
| Wire (HRW-B) | 22mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Wire (UL3068) | 22mg/Kg | No Data | No Data | No Data | No Data | No Data |
| Wire (KC) | N/D | N/D | N/D | N/D | N/D | N/D |
| Silicone (KR220L) | No Data | No Data | No Data | No Data | No Data | No Data |

| ROHS/WEEE DATA – RH25/RH50 RESISTORS | | | | | | |
|--------------------------------------|------------------|----------|----------------------|----------|-----|------|
| Part Name: | Part Type: | | Description: | | | |
| RH25/RH50 | Resistor | | Wire Wound Resistors | | | |
| | Pb | Cd | Hg | Cr 6+ | PBB | PBDE |
| AL CASE(A6063-T) | 4mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Resistance Wire(ISOTAN) | 11mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Resistance Wire(ISA0HM) | N/D | N/D | N/D | N/D | N/D | N/D |
| Resistance Wire (NLX Alloy) | 2.2ug/g | <0.1ug/g | <0.2ug/g | <0.1ug/g | N/D | N/D |
| Resistance Wire (Cupratal Alloy) | 1.0ug/g | <0.1ug/g | <0.2ug/g | <0.1ug/g | N/D | N/D |
| Ceramic Rod | 1.32mg/Kg | N/D | N/D | N/D | N/D | N/D |
| Fe Cap(7 diameter) | N/D | N/D | N/D | N/D | N/D | N/D |
| Coating Paint(Ohmcoat AF490) | N/D | N/D | N/D | N/D | N/D | N/D |
| Silicone Compound(KMC-10) | Data Forthcoming | | | | | |