MOUNTING OF THICK FILM POWER RESISTORS TYPE PR100

As explained in the Catalogue, to assembly PR100 resistors on aluminium heatsink, it is necessary to use a suitable heat transfer compound.

The substratum base under the resistor juts out a little from the resistor frame; when the resistor will be screw to the heatsink across the aluminium inserter it adjusts itself to reproduce the heatsink surface.

In order to ensure that produced heat is transferred to the heatsink, a thermal compound with a good thermal conductivity must be placed between resistor base and the heatsink surface (minimum 1 W/mK).

The heatsink planarity required is about 0,05mm and the surface finish 6,3 µm. When the resistor will be fixed to the heatsink thermal compound will fill up all cavities, so knowing resistor and heatsink surface planarity we suggest a thickness of 0.06mm.

For an area 23 x 23mm and a thickness of 0.06mm you have to use approx. 30 mm^3 of thermal compound; the density is usually 2 ÷ 3 gr/cm^3, so you have to use about 0,10g of product.

Thermal compound must be uniformly applied on the resistor base with a spatula or for maximum uniformity with the serigraphic method on the heatsink.

Following there are the best thermal compounds that we know:

1) Thermal compound HTCP (Electrolube) 2.5 W/mK 3g/cm³
2) Thermal compound HTSP (Electrolube) 3 W/mK 3g/cm³
3) Thermal compound PTK-002 (Cooler Master) 4,5W/mK 2,6g/cm³
4) Thermal compound Silver 5 (Arctic Silver) 9W/mK

Of course the best performances are achieved with the higher values thermal compounds, the thermal resistance Rth = 0,5°C/W indicated on catalogue is for thermal compound of 1W/mK.

The resistor assembly must be done with the following instructions:

1) Place the resistor upon the heatsink and fix it with one screw without tighten it.
2) Turn it of few degrees to arrange the thermal compound then screw in alternatively the two screws until 1.5 Nm each.

The two mounting screws don't require washer or grower because the aluminium inserter prevents it from force loosing.

Handle with care to avoid bump to the exposed Alumina and make sure that extraneous parts are not present between the Alumina and the heatsink. They could cause the fracture of the substrate and therefore they can reduce the dielectric strength and/or open the resistor.

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