

# PFC Series

Thick Film Power SMD Resistors



- D-PAK Foot Pattern
- Very Low Profile
- Resistances from 0.1 to 51k ohms
- Suitable for Current Sensing
- Power Rating to 25 Watts
- Resistance Tolerances to  $\pm 1\%$
- TCR to  $\pm 100\text{ppm}/^\circ\text{C}$
- Isolated Back Plate

## SPECIFICATIONS

| Type                                    | PFC10                                                     |                                               |
|-----------------------------------------|-----------------------------------------------------------|-----------------------------------------------|
| Power Rating with heatsink <sup>1</sup> | 25 Watts                                                  |                                               |
| Short Time Overload <sup>2</sup>        | 35 Watts                                                  |                                               |
| Thermal Resistance Rthj-c               | 3.6° K/W                                                  |                                               |
| Resistance Range                        | 0.1 - 51K Ohms E24+ (includes 2.5, 4.0, 5.0, 8.0, and 16) |                                               |
| Tolerances (others upon request)        | 1% / 5%                                                   |                                               |
| Temperature Coefficient                 | 100 ppm/°K                                                |                                               |
| Operating Temperature                   | -55°C to 155°C                                            |                                               |
| Max Operating Voltage                   | $\sqrt{P * R}$                                            |                                               |
| Capacitance                             | 2.65 pF                                                   |                                               |
| Inductance                              | 15 nH                                                     |                                               |
| Withstanding Voltage                    | 1500 VAC                                                  |                                               |
| Insulation Resistance                   | Over 1,000 MΩ                                             |                                               |
| Resistor Material                       | Thick Film                                                |                                               |
| Moisture Sensitivity Level              | MSL-1                                                     |                                               |
| Mass                                    | 0.324 grams                                               |                                               |
| Standard Packaging                      | 500 pieces per 254 mm diameter reel within paper box.     |                                               |
| Test Conditions                         | Results                                                   |                                               |
| Load Life                               | $\pm 1\%$                                                 | 90 min ON, 30 min OFF, 1000 hrs @ 25°C        |
| Humidity                                | $\pm 1\%$                                                 | 90-95% RH, 0.1W, 1000 hrs @ 40°C              |
| Temperature Cycle                       | $\pm 0.25\%$                                              | -55°C for 30 min, +155°C for 30 min, 5 cycles |
| Solder Heat                             | $\pm 0.1\%$                                               | 350°C $\pm 5^\circ\text{C}$ for 3 seconds     |
| Lead Solderability                      | Over 95% of surface                                       | 230° $\pm 5^\circ\text{C}$ for 3 seconds      |
| Vibration                               | $\pm 0.25\%$                                              | IEC60068-2-6                                  |

<sup>1</sup> Power rating is 2.5 watt using a simple footprint and without heatsink

<sup>2</sup> Overload rating is permissible for continuous duty with back solder pad temperature not exceeding 25°C

## Ordering Information

Part Description: Part Type - Resistance - Tolerance  
PFC10 10 Ohms 1%

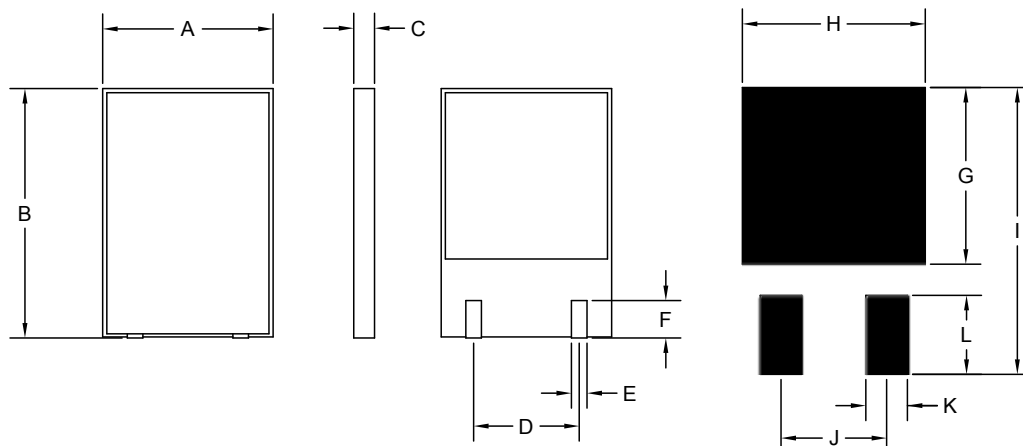
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## DIMENSIONS

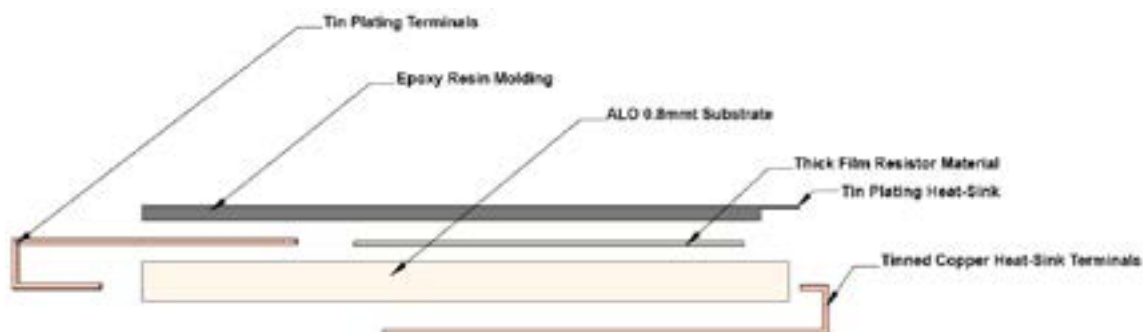
Solder Pad Layout



**Note:** Back solder pad is isolated from both pins.

| Dimension | mm   | tol. (±mm) | inches | tol. (±inches) |
|-----------|------|------------|--------|----------------|
| A         | 8.20 | 0.20       | 0.323  | 0.008          |
| B         | 12.0 | 0.20       | 0.472  | 0.008          |
| C         | 0.90 | 0.10       | 0.039  | 0.002          |
| D         | 5.08 | 0.10       | 0.200  | 0.004          |
| E         | 0.75 | 0.1        | 0.030  | 0.002          |
| F         | 1.85 | 0.05       | 0.070  | 0.002          |
| G         | 8.50 | -          | 0.335  | -              |
| H         | 8.80 | -          | 0.346  | -              |
| I         | 14.1 | -          | 0.555  | -              |
| J         | 5.08 | -          | 0.200  | -              |
| K         | 2.00 | -          | 0.079  | -              |
| L         | 3.80 | -          | 0.150  | -              |

## CHIP CONSTRUCTION



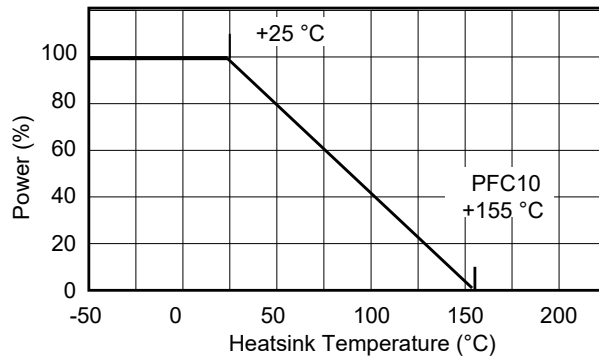
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## MOUNTING / DERATING

Power Derating Curve



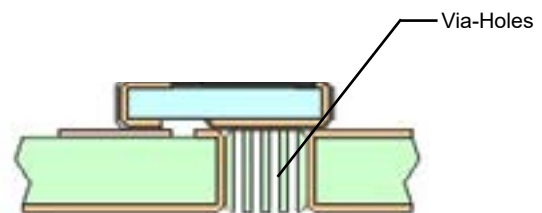
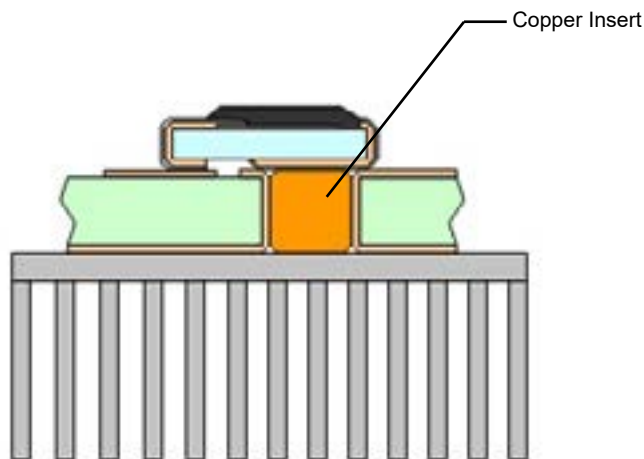
### Power Rating Notes -

The PFC Series Resistors must be attached to a suitable heat-sink. The maximum internal resistor temperature is 155°C.

To specify an appropriate heatsink use the following formula :

$$R_{\theta H} = \frac{T_{MAX} - (P * R_{\theta R}) - T_A}{P}$$

Where:  $R_{\theta H}$  = Thermal Resistance of Heatsink ( K/W )  
 $R_{\theta R}$  = Thermal Resistance of Resistor ( K/W )  
 $T_{MAX}$  = Maximum Temperature of Resistor  
 $T_A$  = Ambient Temperature of Heatsink ( °C )  
 $P$  = Power Through Resistor ( W )



Copper insert improves thermal conductivity to heatsink. Power ratings of 35 watts can be achieved through active cooling of the heatsink. For more general information on heatsinking please see our training module on heatsinking by clicking here:

<https://riedon.com/media/pdf-tech/PowerandHeatsink.pdf>