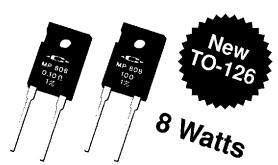
# MP808 / MP825 (TO-126 style) and MP816 / MP850 (TO-220 style) Kool-Pak<sup>®</sup> Power Film Resistors

### TO-126 and TO-220 Style Power Packages - Non-Inductive Designs

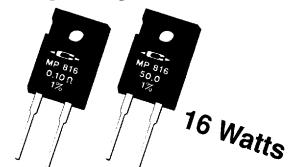
Use your thermal design experience with power semiconductors in the TO-220 and TO-126 style power package. This experience will help you get the most out of this unique family of power resistors. The thermal design issues are the same where power handling capability is based on the case temperature which is maintained in your design.

### MP808 and MP816 with an All Molded Package Configuration



# MP 808 Kool-Pak<sup>®</sup> Power Resistors TO-126 Style Power Package

- 8 Watts at +25°C Case Temperature derated to zero at +150°C
- Thermally Conductive Molded Package
- Lower Cost
- Resistance Range of 0.02 ohm to 10K
- Resistor element is electrically isolated from the mounting surface



### MP816 Kool-Pak<sup>®</sup> Power Resistors TO-220 Style Power Package

- 16 Watts at +25°C Case Temperature derated to zero at +150°C
- Thermally Conductive Molded Package
- Lower Cost
- Resistance Range of 0.10 ohm to 10K
- Resistor element is electrically isolated from the mounting surface

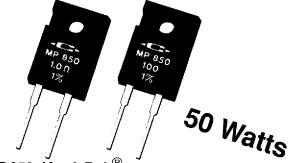
Construction of MP808 and MP816: The MP808 and MP816 Kool-Pak® Power Film Resistors are constructed with Caddock's Micronox® resistance film fired onto a flat ceramic substrate. The terminal attachment and resistance element geometry are configured to provide outstanding non-inductive performance. The resistor body is completely surrounded by a high thermal conductivity molding compound to finish this cost effective power resistor package.

# MP825 and MP850 Power Packages Include an Integral Metal Mounting Surface for Highly Efficient Thermal Transfer



# MP825 Kool-Pak® Power Resistors TO-126 Style Power Package

- 25 Watts at +25°C Case Temperature derated to zero at +150°C
- Copper Heat Sink Integral in the Molded Package
- Resistance Range of 0.02 ohm to 10K
- Resistor element is electrically isolated from the mounting surface



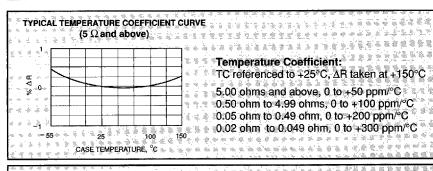
### MP850 Kool-Pak<sup>®</sup> Power Resistors TO-220 Style Power Package

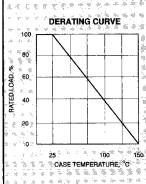
- 50 Watts at +25°C Case Temperature derated to zero at +150°C
- Copper Heat Sink Integral in the Molded Package
- Resistance Range of 0.20 ohm to 10K
- Resistor element is electrically isolated from the mounting surface

Construction of MP825 and MP850: The MP825 and MP850 Kool-Pak® Power Film Resistors are constructed with Caddock's Micronox® resistance film fired onto a flat ceramic substrate. The terminal attachment and resistance element geometry are configured to provide outstanding non-inductive performance. The ceramic substrate is bonded to a copper heat sink which becomes the metal mounting surface. This assembly is molded in a high thermal conductivity molding compound with the copper heat sink flush with the back surface of the part.

Certain products shown in this catalog are covered by one or more patents, there are also patents pending.

| Model | Power Rating | Package      | Dimensions | Dielect, Strength<br>VRMS AC | Max.<br>Voltage | Resi<br>Min. | stance | Leadwire                | Comments  |
|-------|--------------|--------------|------------|------------------------------|-----------------|--------------|--------|-------------------------|---|
| MP808 | 8 Watts *    | TO-126 Style | Figure 1   | 1,500                        | 300             | 0.02 Ω       | 10 K   | Solder Coated<br>Copper | All Molded Package                                |
| MP816 | 16 Watts*    | TO-220 Style | Figure 2   | 1,500                        | 300             | 0.10 Ω       | 10 K   | Solder Coated<br>Copper | All Molded Package                                |
| MP825 | 25 Watts*    | TO-126 Style | Figure 1   | 1,500                        | 300             | 0.02 Ω       | 10 K   | Solder Coated<br>Copper | Integral Metal Mounting Surface in Molded Package |
| MP850 | 50 Watts*    | TO-220 Style | Figure 2   | 1,500                        | 300             | 0.20 Ω       | 10 K   | Solder Coated<br>Copper | Integral Metal Mounting Surface in Molded Package |



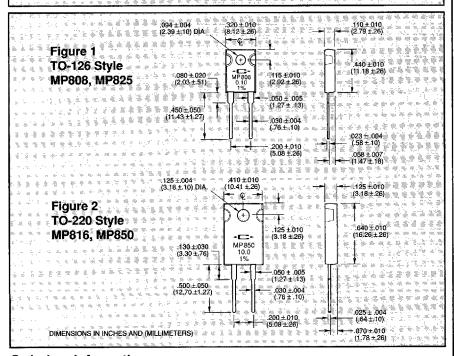


\* The case temperature is to be used for purposes of establishing the maximum applied power. See Derating Curve. The case temperature measurement is made with the thermocouple contacting the bottom insulated mounting surface of the package (center of bottom surface), the device mounted on a heat sink, thermal grease applied at a mounting torque of 8 in-lbs maximum. Without a heat sink, when in free air at +25°C, the MP808 and the MP825 are rated for 1.25 waits, the MP816 and the MP850 are rated for 2.25 waits.

Derating (thermal resistance) for each model is as follows:

MP808: 0.064 W/°C(15.63°C/W) MP816: 0.128 W/°C(7.81°C/W) MP825: 0.200 W/°C(5.00°C/W) MP850: 0.400 W/°C(2.50°C/W)

Mounting Note: The MP Kool-Pak® Resistors must be mounted using a screw and compression washer mounting technique. This will provide sufficient pressure on the package over time and through large temperature variations to maintain the maximum power dissipation capability. Maximum torque to be applied to mounting screw is 8 in-lbs.



Ordering Information:

MP816 - 50.0 - 1.0%

Tolerance

Model Number: -

### Specifications:

**ResistanceTolerance:**  $\pm 1\%$  for 0.05Ω up to 10kΩ,  $\pm 5\%$  for 0.02Ω up to 0.049Ω (0.5%, 2%,5%,10% and 20% are available for most reistance values).

**Insulation Resistance:** 10,000 Megohms, min. The resistor element is electrically isolated from the mounting surface.

**Terminal Strength:** Mil-Std-202, Method 211, Cond. A (Pull Test) 5 lbs.

MP808, MP816, MP825:

 $\Delta$ R  $\pm$ (0.2 percent + 0.001 ohm) max. MP850:

 $\Delta R \pm (0.2 \text{ percent} + 0.01 \text{ ohm}) \text{ max.}$ 

**Thermal Shock:** Mil-Std-202, Method 107, Cond. F.

MP808, MP816, MP825:

 $\Delta R \pm (0.3 \text{ percent} + 0.001 \text{ ohm}) \text{ max.}$  MP850:

 $\Delta R \pm (0.3 \text{ percent} + 0.01 \text{ ohm}) \text{ max.}$ 

#### Momentary Overload:

MP816 and MP850: 2 times rated power with applied voltage not to exceed 1.5 times maximum continuous operating voltage for 5 seconds.

MP816:

 $\Delta$ R  $\pm$ (0.3 percent + 0.001 ohm) max. MP850:

 $\Delta R \pm (0.3 \text{ percent} + 0.01 \text{ ohm}) \text{ max.}$ 

MP808 and MP825: 1.5 times rated power with applied voltage not to exceed 1.5 times maximum continuous operating voltage for 5 seconds.

MP808, MP825:

 $\Delta R \pm (0.3 \text{ percent} + 0.001 \text{ ohm}) \text{ max.}$ 

Moisture Resistance: Mil-Std-202, Method 106. MP808, MP816, MP825:

 $\Delta$ R  $\pm$ (0.5 percent + 0.001 ohm) max. MP850:

 $\Delta R \pm (0.5 \text{ percent + 0.01 ohm) max.}$ 

**Load Life:** 2,000 hours at rated power. Power rating dependent upon case temperature. See derating curve.

MP808, MP816, MP825:

 $\Delta R$  ±(1.0 percent + 0.001 ohm) max. MP850:

 $\Delta R \pm (1.0 \text{ percent} + 0.01 \text{ ohm}) \text{ max.}$ 

**Shock:** 100G, Mil-Std-202, Method 213, Cond. I. **MP808, MP816, MP825:** 

 $\Delta R \pm (0.2 \text{ percent + 0.001 ohm) max.}$  MP850:

 $\Delta R \pm (0.2 \text{ percent} + 0.01 \text{ ohm}) \text{ max.}$ 

Vibration, High Frequency: Mil-Std-202, Method 204, Cond. D.

MP808, MP816, MP825:

 $\Delta$ R ±(0.2 percent + 0.001 ohm) max. MP850:

 $\Delta R \pm (0.2 \text{ percent} + 0.01 \text{ ohm}) \text{ max.}$ 

Measurement Note: For these specifications, resistance measurement shall be made at a point 0.2 inch (5.08 mm) from the resistor body.