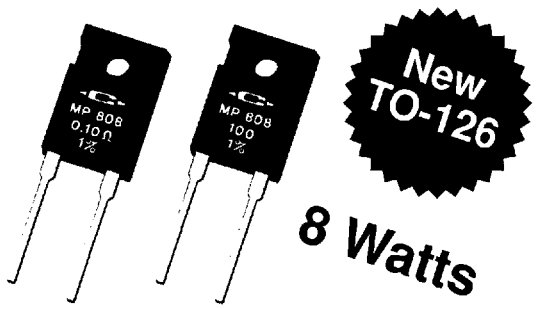
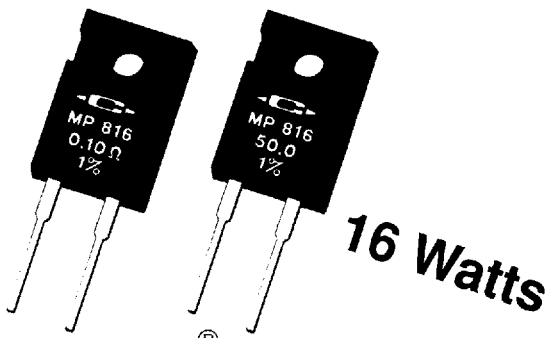
MP808 / MP825 (TO-126 style) and MP816 / MP850 (TO-220 style) Kool-Pak® Power Film Resistors

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





MP808 Kool-Pak® Power Resistors
TO-126 Style Power Package

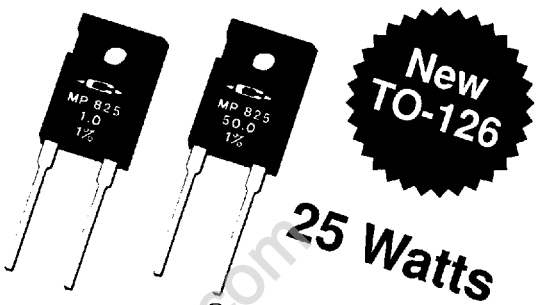
- 8 Watts at +25°C Case Temperature derated to zero at +150°C
- Thermally Conductive Molded Package
- Lower Cost
- Resistance Range of 0.02 ohm to 10K
- Resistor element is electrically isolated from the mounting surface

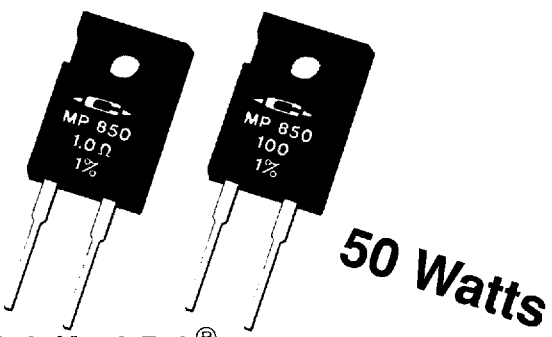
MP816 Kool-Pak® Power Resistors
TO-220 Style Power Package

- 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® 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.

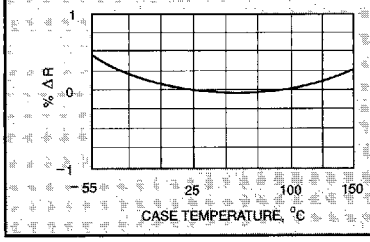
Certain products shown in this catalog are covered by one or more patents, there are also patents pending.

1789600 0000341 57T

www.DataSheet4U.com

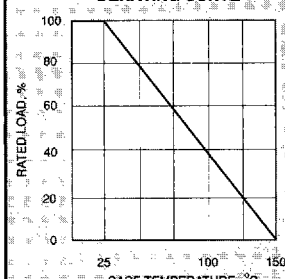
Model No.	Power Rating	Package	Dimensions	Dielect. Strength V_{RMS} AC	Max. Voltage	Resistance Min.	Resistance Max.	Leadwire	Comments
MP808	8 Watts ★	TO-126 Style	Figure 1	1,500	300	0.02 Ω	10 K	Solder Coated Copper	All Molded Package
MP816	16 Watts*	TO-220 Style	Figure 2	1,500	300	0.10 Ω	10 K	Solder Coated Copper	All Molded Package
MP825	25 Watts*	TO-126 Style	Figure 1	1,500	300	0.02 Ω	10 K	Solder Coated 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 Copper	Integral Metal Mounting Surface in Molded Package

TYPICAL TEMPERATURE COEFFICIENT CURVE
(5 Ω and above)



Temperature Coefficient:
TC referenced to +25°C, ΔR taken at +150°C
5.00 ohms and above, 0 to +50 ppm/°C
0.50 ohm to 4.99 ohms, 0 to +100 ppm/°C
0.05 ohm to 0.49 ohm, 0 to +200 ppm/°C
0.02 ohm to 0.049 ohm, 0 to +300 ppm/°C

DERATING CURVE



* **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 watts, the MP816 and the MP850 are rated for 2.25 watts.**

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.

Figure 1
TO-126 Style
MP808, MP825

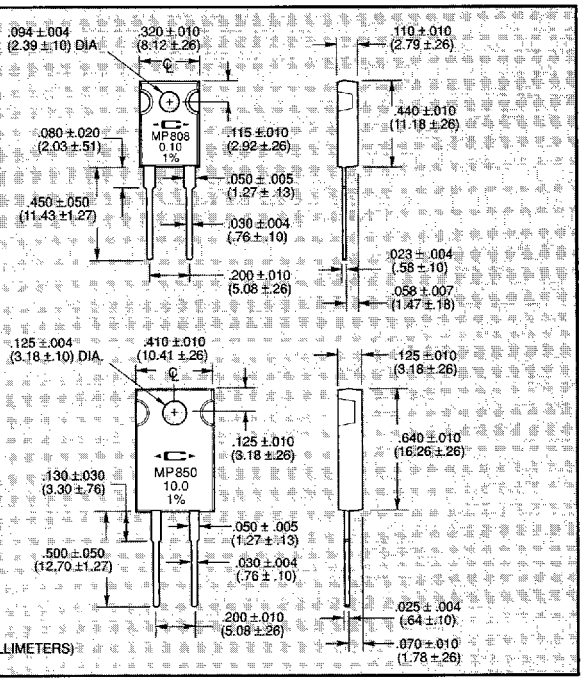


Figure 2
TO-220 Style
MP816, MP850

DIMENSIONS IN INCHES AND (MILLIMETERS)

Specifications:

ResistanceTolerance: ±1% for 0.05Ω up to10kΩ, ±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:
ΔR ±(0.2 percent + 0.001 ohm) max.
MP850:
ΔR ±(0.2 percent + 0.01 ohm) max.

Thermal Shock: Mil-Std-202, Method 107, Cond. F.
MP808, MP816, MP825:
ΔR ±(0.3 percent + 0.001 ohm) max.
MP850:
ΔR ±(0.3 percent + 0.01 ohm) 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:
ΔR ±(0.3 percent + 0.001 ohm) max.
MP850:
ΔR ±(0.3 percent + 0.01 ohm) 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:
ΔR ±(0.3 percent + 0.001 ohm) max.

Moisture Resistance: Mil-Std-202, Method 106.
MP808, MP816, MP825:
ΔR ±(0.5 percent + 0.001 ohm) max.
MP850:
ΔR ±(0.5 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:
ΔR ±(1.0 percent + 0.001 ohm) max.
MP850:
ΔR ±(1.0 percent + 0.01 ohm) max.

Shock: 100G, Mil-Std-202, Method 213, Cond. I.
MP808, MP816, MP825:
ΔR ±(0.2 percent + 0.001 ohm) max.
MP850:
ΔR ±(0.2 percent + 0.01 ohm) max.

Vibration, High Frequency: Mil-Std-202, Method 204, Cond. D.
MP808, MP816, MP825:
ΔR ±(0.2 percent + 0.001 ohm) max.
MP850:
ΔR ±(0.2 percent + 0.01 ohm) max.

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

Ordering Information:

MP816 - 50.0 - 1.0%
Model Number: MP816
Resistor Value: 50.0
Tolerance: 1.0%

1789600 0000342 406