MP2060 Kool-Pak® Clip Mount Power Film Resistor

TO-220 Style Power Resistor Designed for Clip Mounting - Non-Inductive

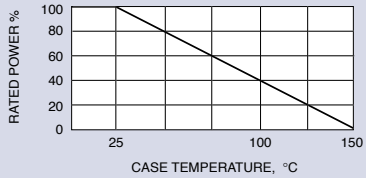
New Clip Mount Values to 0.005Ω

- Up to 60 Watts continuous power at +25°C case temperature, 0.020Ω and above.
- Up to 60 Amps continuous current at +25°C case temperature, 0.015Ω and below.
- TO-220 Style package utilizes proven power semiconductor thermal solutions.
- Equivalent to UL94 V-0 flammability rating.
- Excellent pulse/surge performance.
- Non-inductive design for high speed switching, snubbers and rf applications.
- Operation up to +150°C case temperature.
- Electrically isolated case.

These products are covered by one or more patents, also patents pending.

Model	Package	Resistance	Power Rating	Max. Current Rating (Amps)	Max. Voltage	Thermal Resistance $R_{\theta JC}$ Film (J) to Case (C)
MP2060	TO-220 Style	0.005Ω	18 Watts *	60 A_{rms}	Current Limited	6.94°C/Watt
		0.010Ω	36 Watts *	60 A_{rms}	Current Limited	3.47°C/Watt
		0.015Ω	54 Watts *	60 A_{rms}	Current Limited	2.31°C/Watt
		0.020Ω to 1.00K	60 Watts *	$I = \sqrt{P/R}$	250 V_{rms}	2.08°C/Watt

Derating Curve



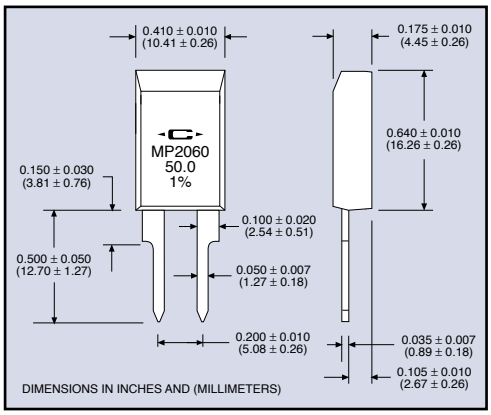
*** Derating Using Case Temperature (T_C):**
All power and associated overload ratings are derated based upon case temperature using the derating curve. The case temperature is measured at the center of the ceramic mounting surface, with the part properly mounted and under electrical load. Without a heat sink, when in free air at +25°C, the MP2060 is rated for 2.5 watts.

The thermal design should satisfy the following equation:

Case Temperature (Tc) + [Thermal Resistance ($R_{\theta JC}$) x power applied (Watts)] ≤ 150°C, considering the full operating temperature range of the application.

Mounting Note: Mount on a smooth, clean and flat heat sink surface with a thermal interface material, such as thermal grease. The entire exposed ceramic portion must be in contact with the heat sink. When using a spring clip, it is recommended that a mounting force of 8 to 30 pounds (35 to 130 N) be applied to the center of the package. The clip should be round or smooth in the contact area to avoid concentrating the load on a small point of the plastic body of the package. Another mounting option is to use a pressure bar method which can achieve a greater mounting force with a greater contact area.

For additional applications information regarding mounting and pulse handling see the Caddock Applications Notes at caddock.com or contact Applications Engineering.



Standard Resistance Values:

Tolerance: 1% Standard (except as noted)

0.005 Ω 5%	0.33 Ω	10.0 Ω	100 Ω
0.010 Ω 2%	0.40 Ω	12.0 Ω	120 Ω
0.015 Ω 2%	0.50 Ω	15.0 Ω	150 Ω
0.020 Ω	0.75 Ω	20.0 Ω	200 Ω
0.025 Ω	1.00 Ω	25.0 Ω	250 Ω
0.030 Ω	1.50 Ω	27.0 Ω	300 Ω
0.033 Ω	2.00 Ω	30.0 Ω	330 Ω
0.040 Ω	2.50 Ω	33.0 Ω	400 Ω
0.050 Ω	3.00 Ω	40.0 Ω	470 Ω
0.075 Ω	3.30 Ω	47.0 Ω	500 Ω
0.10 Ω	4.00 Ω	50.0 Ω	560 Ω
0.15 Ω	5.00 Ω	56.0 Ω	750 Ω
0.20 Ω	7.50 Ω	75.0 Ω	1.00 K
0.25 Ω	8.00 Ω		
0.30 Ω			

For custom values and tolerances contact Applications Engineering

Ordering Information:

MP2060 - 0.050 - 1%

Model Number: MP2060
Resistor Value: 0.050
Tolerance: 1%

Packaging Information: MP2060 resistors are packaged in plastic shipping tubes, 50 pieces per tube. These resistors are available in a 50 piece minimum quantity and in full tube quantity increments (i.e. 50, 100, 150, etc.).

Specifications:

Temperature Coefficient:
TC referenced to +25°C, ΔR taken at +150°C
0.50 ohm and above, -20 to +80 ppm/°C
0.050 ohm to 0.49 ohm, 0 to +100 ppm/°C
0.015 ohm to 0.049 ohm, 0 to +200 ppm/°C
0.005 ohm to 0.014 ohm, 0 to +300 ppm/°C

Operating Temperature: -55°C to +150°C

Inductance: 10 nH typical in series when measured at the shoulder of the lead.

Capacitance: <1 pf typical without heat sink.

DWV: 1500 V_{rms}AC isolation to the mounting surface or a clip in contact with the top surface.

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

Momentary Overload: 1.5 times rated power for 5 seconds, ΔR ±(0.5 percent + 0.0005 ohm) max.

Load Stability: 2000 hours at rated power ΔR less than ±(1 percent +0.0005 ohm).

Moisture Resistance: Mil-Std-202, Method 106, ΔR ±(0.5 percent + 0.0005 ohm) max.

Thermal Shock: Mil-Std-202, Method 107, Cond. F, ΔR ±(0.5 percent + 0.0005 ohm) max.

Shock: 100G, Mil-Std-202, Method 213, Cond. I, ΔR ±(0.4 percent + 0.0005 ohm) max.

Vibration, High Frequency: Mil-Std 202, Method 204, Condition D, ΔR ±(0.4 percent + 0.0005 ohm) max.

Terminal Strength: Mil-Std-202, Method 211, Cond. A (Pull Test) 5 lbs., ΔR ±(0.2 percent + 0.0005 ohm) max.

Terminal Material: Solderable

Measurement Note: Resistance measurements shall be made at 0.2 inch (5.08 mm) from the resistor body.

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