

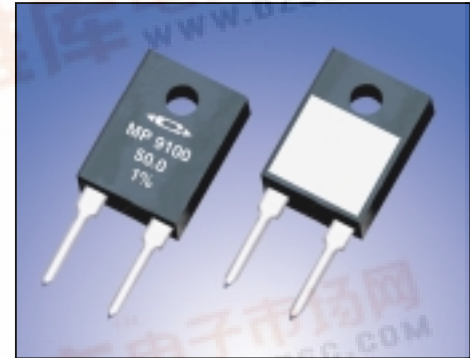
# MP9100 TO-247 Kool-Pak® Power Film Resistor

## TO-247 Style Power Package 100 Watt Non-Inductive Design

- 100 watt continuous power at +25°C case temperature
- TO-247 package utilizes proven power semiconductor thermal solutions
- Equivalent to UL94 V-O flammability rating
- Excellent pulse/surge performance
- Non-inductive design for high speed switching, snubbers and rf applications
- Safe and reliable operation up to +175°C case temperature
- Electrically isolated case

### Maximum Ratings

| Rating   | Symbol              | Value       | Unit                 |
|--|---------------------|-------------|----------------------|
| Power Dissipation: With heat sink $T_C=25^{\circ}\text{C}$ | $P_D$               | 100         | Watts                |
| Free Air at $25^{\circ}\text{C}$ without heat sink         | $P_D$               | 3.5         | Watts                |
| Thermal Resistance: Resistance film (J) to Case (C)        | $R_{\theta JC}$     | 1.5         | $^{\circ}\text{C/W}$ |
| Operating and Storage Temperature Range                    | $T_C, T_J, T_{STG}$ | -55 to +175 | $^{\circ}\text{C}$   |



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

**Single Pulse/Surge Ratings: (1)**

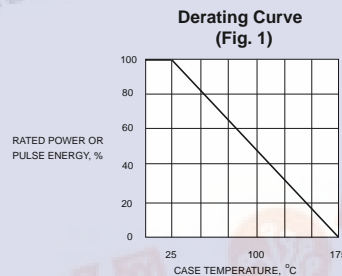
$T_C = 25^\circ\text{C}$  with no continuous power applied, derate per Fig. 1

| Duration      | Energy | Units      |
|---------------|--------|------------|
| 10 $\mu$ sec  | 0.07   | Joules     |
| 100 $\mu$ sec | 0.25   | Joules     |
| 1 msec        | 0.9    | Joules     |
| 10 msec       | 3.5    | Joules     |
| 100 msec      | 15     | Joules     |
| 250 msec      | 38     | Joules     |
| V maximum     | 600    | volts peak |

(1) For multiple pulses/surge ratings please contact applications engineering for assistance

### Derating Using Case Temperature ( $T_C$ ):

All power and 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.



**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 screw mounting, use a Belleville washer which provides a mounting force of 150 to 300 pounds (665 to 1330 N). Mounting torque to avoid package damage is 8 in.-lbs. (0.90 N-m). If a spring clip is used, a clip force of 4.5 to 35 pounds (20 to 155 N) is recommended.

### Electrical Specifications:

**Temperature Coefficient:**

TC referenced to +25°C,  $\Delta R$  taken at +175°C  
0.50 ohm and above, -20 to +80 ppm/°C  
0.050 ohm to 0.49 ohm, 0 to +150 ppm/°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<sub>RMS</sub> 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,  $\Delta R \pm(0.5 \text{ percent} + 0.0005 \text{ ohm})$  max., based on a case temperature of  $+175^{\circ}\text{C}$  max.

### Environmental Specifications:

**Load Stability:** 2000 hours at rated power  
 $\Delta R$  less than  $\pm(1\% + 0.0005\Omega)$

**Moisture Resistance:** Mil-Std-202, Method 106,  $\Delta R \pm(0.5 \text{ percent} + 0.0005 \text{ ohm}) \text{ max.}$

**Thermal Shock:** Mil-Std-202, Method 107, Cond. F,  $\Delta R \pm(0.5 \text{ percent} + 0.00005 \text{ ohm}) \text{ max.}$

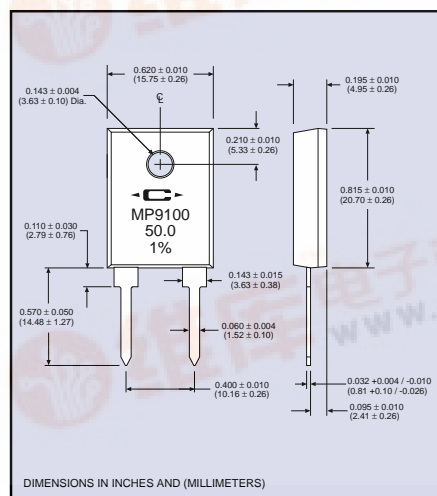
**Shock:** 100G, Mil-Std-202, Method 213,  
Cond. I,  $\Delta R \pm(0.4 \text{ percent} + 0.0005 \text{ ohm})$  max.

**Vibration, High Frequency:** Mil-Std 202, Method 204, Condition D,  $\Delta R \pm (0.4\% + 0.0005\Omega)$  max.

**Terminal Strength:** Mil-Std-202, Method 211,  
Cond. A (Pull Test) 5 lbs.,  
 $\Delta R \pm (0.2 \text{ percent} + 0.0005 \text{ ohm}) \text{ max.}$

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

For more information please see our website:  
Application Note: CAD-9100-1



### Standard Resistance Values:

Tolerance: 1% Standard

|                |               |               |               |
|----------------|---------------|---------------|---------------|
| 0.050 $\Omega$ | 0.50 $\Omega$ | 3.90 $\Omega$ | 25.0 $\Omega$ |
| 0.10 $\Omega$  | 0.75 $\Omega$ | 5.00 $\Omega$ | 27.0 $\Omega$ |
| 0.12 $\Omega$  | 1.00 $\Omega$ | 8.00 $\Omega$ | 33.0 $\Omega$ |
| 0.15 $\Omega$  | 1.50 $\Omega$ | 10.0 $\Omega$ | 39.0 $\Omega$ |
| 0.20 $\Omega$  | 2.00 $\Omega$ | 12.0 $\Omega$ | 47.0 $\Omega$ |
| 0.25 $\Omega$  | 2.20 $\Omega$ | 15.0 $\Omega$ | 50.0 $\Omega$ |
| 0.30 $\Omega$  | 2.50 $\Omega$ | 18.0 $\Omega$ | 56.0 $\Omega$ |
| 0.33 $\Omega$  | 3.00 $\Omega$ | 20.0 $\Omega$ | 75.0 $\Omega$ |
| 0.39 $\Omega$  | 3.30 $\Omega$ | 22.0 $\Omega$ | 100 $\Omega$  |

For custom values and tolerances contact applications engineering

### Ordering Information:

Parts shipped 25 per anti static plastic tube

**MP9100 - 0.050 - 1%**  
Model Number: \_\_\_\_\_ Tolerance (1% Std)  
Resistor Value: \_\_\_\_\_  
(see table)