

## Features

- TO-247 housing
- Low inductance
- High power rating
- Ceramic back plate
- Compatible with lead free solder reflow temperatures
- AEC-Q200 compliant

- RoHS compliant\*

## Applications

- Power supplies
- Motor drives
- Test and measurement
- Rectifiers

# PWR247T-100 Series Power Resistor

## General Information

The Bourns® PWR247T-100 Series is a TO-247 style power resistor manufactured using thick film on alumina ceramic technology. This product is used in current limiting, capacitor discharge or current measurement circuits in power supplies for telecom and industrial applications.

## Electrical & Thermal Characteristics

| Parameter  | Value(s)                                  |
|--|---|
| Resistance Range<br>(See Popular Resistance Values table)  | 0.05 Ω to 100 Ω                           |
| Power Rating @ 25 °C   | 100 W <sup>(1)</sup>                      |
| Resistance Tolerance   | ±1 % <sup>(2)</sup> , ±5 %                |
| Temperature Coefficient @ -55 °C to +125 °C<br>0.015 Ω ≤ R ≤ 0.1 Ω<br>0.1 Ω ≤ R ≤ 20 Ω<br>R > 20 Ω | ±600 PPM/°C<br>±200 PPM/°C<br>±100 PPM/°C |
| Thermal Resistance - R <sub>thj</sub>  | 1.5 °C/W                                  |
| Inductance   | 0.1 μH maximum                            |
| Dielectric Strength  | 3 kV AC for 1 minute                      |
| Insulation Resistance  | 10 GΩ                                     |
| Operating Voltage  | √P*R with a maximum of 500 V              |
| Operating Temperature Range  | -55 °C to +175 °C                         |

(1) Power rating of 3.5 W @ free air (no heat sink).

(2) For resistances ≤ 0.05 Ω, tolerance = ±5 %.

## Environmental Characteristics

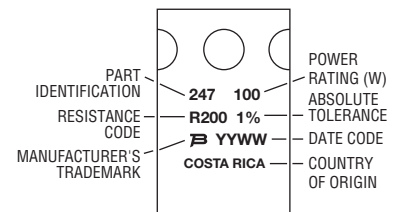
| Characteristic               | Test Condition   | ΔTR Max.           |
|------------------------------|--|--------------------|
| Short Term Overload          | 2x Pr for R < 2 Ω,<br>1.6 x Pr for R ≥ 2 Ω,<br>V < 1.5 x Operating Voltage     | ±0.5 % ± 0.005 Ω   |
| High Temperature Exposure    | +175 °C, 1000 hours, No load   | ±0.25 % ± 0.005 Ω  |
| Temperature Cycling          | -55 °C to +155 °C,<br>Dwell Time: 30 minutes,<br>1000 cycles                   | ±1 % ± 0.005 Ω     |
| Biased Humidity              | 1000 hours, 85 °C, 85 % R.H.   | ±1 % ± 0.005 Ω     |
| Operational Life             | 1000 hours, 125 °C, 5.72 watts   | ±1 % ± 0.005 Ω     |
| Terminal Strength            | MIL-STD-202-211  | ±0.2 % ± 0.005 Ω   |
| Resistance to Solvents       | MIL-STD-202 Method 215   | Pass/Fail          |
| Shock Vibration              | 100 G, 6 ms<br>5 G, 0.5 inch,<br>10-2000 Hz, 12 cycles                         | ±0.5 % ± 0.005 Ω   |
| Resistance to Soldering Heat | +260 °C / 10 seconds   | ±0.5 % ± 0.005 Ω   |
| Flame Retardancy             | 9.0 to 32.0 VDC in 1 hour,<br>3.0 seconds max.,<br>+350 °C for 10 seconds max. | Pass/Fail          |
| ESD                          | AEC-Q200-002   | ±1 % ± 0.005 Ω     |
| Solderability                | J-STD-002  | 95 % coverage min. |

## Popular Resistance Values

| Code | Resistance Value |
|------|------------------|
| R050 | 0.05 Ω           |
| R100 | 0.1 Ω            |
| R200 | 0.2 Ω            |
| 1R00 | 1.0 Ω            |
| 2R00 | 2.0 Ω            |
| 2R70 | 2.7 Ω            |
| 3R30 | 3.3 Ω            |
| 7R50 | 7.5 Ω            |
| 10R0 | 10.0 Ω           |
| 15R0 | 15.0 Ω           |
| 20R0 | 20.0 Ω           |
| 47R0 | 47.0 Ω           |
| 1000 | 100 Ω            |

Other resistance values available upon request.

## Typical Part Marking



## Material Characteristics

Resistor ..... Thick film  
Substrate ..... Alumina (AL203)  
Housing ..... Epoxy  
Pins..... Tinned Copper (Sn/Cu)  
Flammability ..... Conforms to UL-94V0  
Moisture Sensitivity Level ..... 1  
ESD Classification (HBM)..... 6

## Packaging

..... 20 pcs./tube

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

Specifications are subject to change without notice.

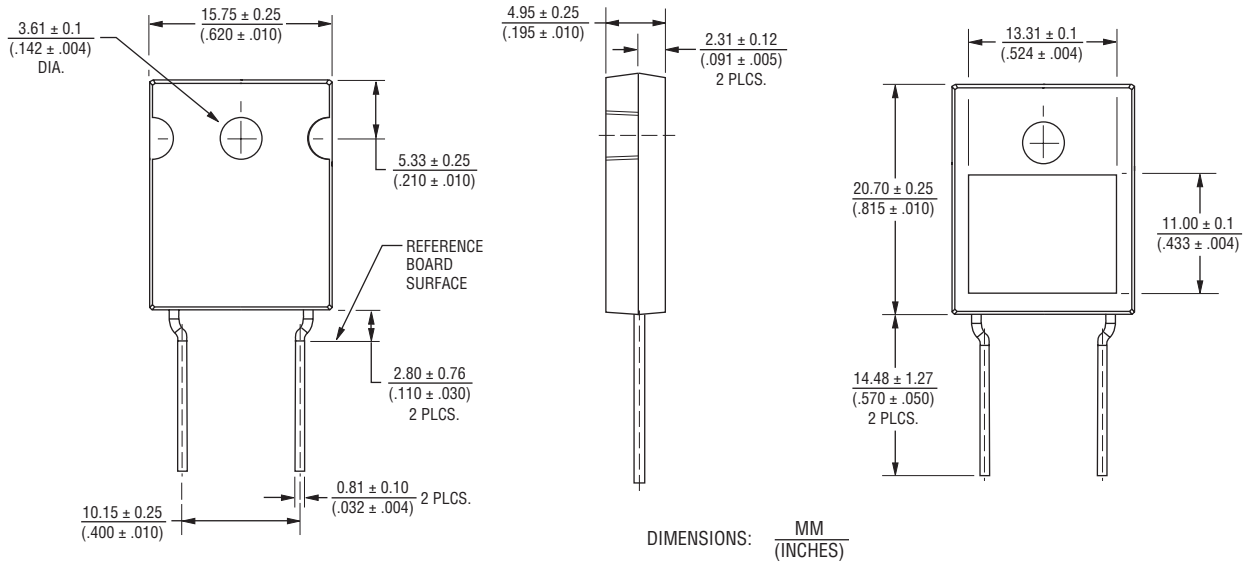
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.

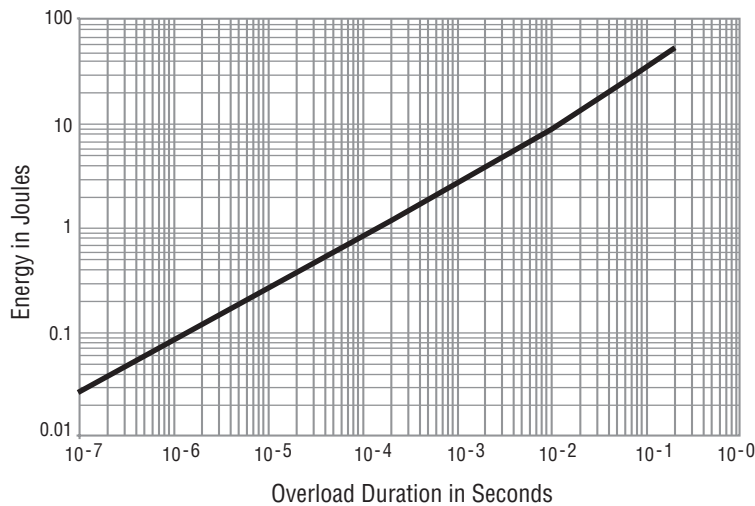
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## Product Dimensions



## Pulse Power Rating



The energy absorbed by the resistor expressed in Joules can be calculated by multiplying the peak power of the pulse in watts times the length of the pulse in seconds.

The energy should not exceed the limits shown in the graph. The overload voltage should not exceed 1.5 times the maximum operating voltage.

## How to Order

**PWR 247 T - 100 - 10R0 J**

Model \_\_\_\_\_  
PWR = Power Resistor

Package \_\_\_\_\_  
247 = TO-247 Style

Pin Style \_\_\_\_\_  
T = Through-hole

Power \_\_\_\_\_  
100 = 100 W

Resistance Value \_\_\_\_\_  
<100 ohms ... "R" represents decimal point (examples: 7R50 = 7.5 Ω; R500 = 0.5 Ω)  
≥100 ohms... First three digits are significant, fourth digit represents number of zeros to follow (examples: 2000 = 200 ohms; 3002 = 30K ohms)

Absolute Tolerance \_\_\_\_\_  
F = 1 %  
J = 5 %

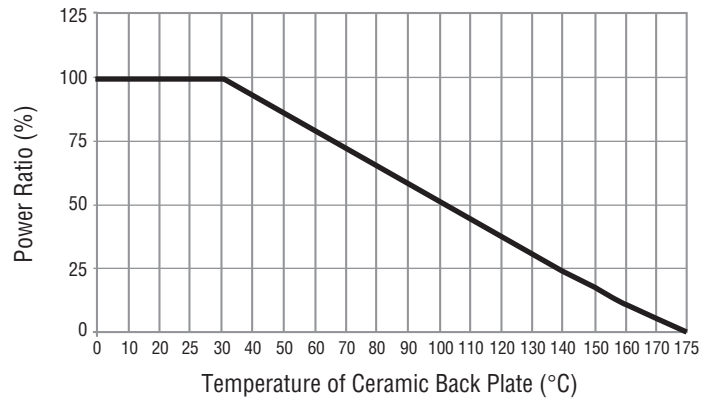
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## Power Derating Curve



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