



## Features

- D<sup>2</sup>PAK housing
- Low inductance
- Resistor electrically isolated from the backplate
- High power rating
- Compatible with lead free solder reflow temperatures
- AEC-Q200 qualified
- RoHS compliant\*

## Applications

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

## PWR263S-20 Series Power Resistor

### General Information

Bourns® PWR263S-20 Series is a TO263 DPAK style power resistor manufactured using thick film on alumina ceramic technology, and used in current measurement, snubber, bleeder and discharge circuits.

### Electrical & Thermal Characteristics

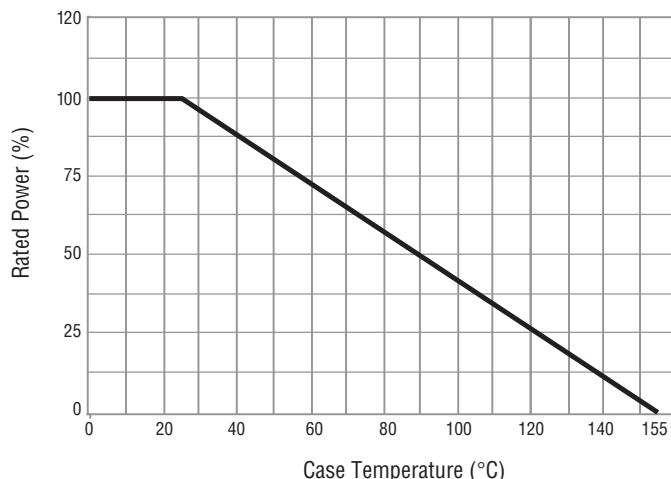
| Parameter                                           | Value(s)                     |
|-----------------------------------------------------|------------------------------|
| Resistance<br>(See Popular Resistance Values table) | 0.02 Ω to 130 KΩ             |
| Power Rating @ 25 °C Case Temperature               | 20 W                         |
| Tolerance                                           | ±1 %**, ±5 %                 |
| TCR<br>0.02 Ω < R < 130.0K Ω                        | ±100 PPM/°C                  |
| Thermal Resistance - R <sub>thj</sub>               | 6.5 °C/W                     |
| Inductance                                          | 0.1 μH maximum               |
| Operating Voltage                                   | √P*R with a maximum of 250 V |
| Dielectric Strength                                 | 2 KV AC                      |
| Insulation Resistance                               | 10 GΩ                        |
| Operating Temperature                               | -55 °C to 155 °C             |

\*\* Available for most values. Check Popular Resistance Values table.

### Reliability Characteristics

| Parameter                                                                                  | Specification |
|--------------------------------------------------------------------------------------------|---------------|
| Short Term Overload (2x Pr for R < 2 Ω, 1.6 x Pr for R ≥ 2 Ω, V < 1.5 x Operating Voltage) | ΔR ±0.25 %    |
| Load Life (1000 hours at rated power)                                                      | ΔR ±1.0 %     |
| Thermal Shock (-55 °C to 155 °C, 5 cycles)                                                 | ΔR ±0.5 %     |
| Resistance to Soldering Heat (10 seconds at 270 °C)                                        | ΔR ±0.5 %     |
| Vibration (20 G 10-2000 Hz .06 " D.A.)                                                     | ΔR ±0.25 %    |
| Moisture Sensitivity Level                                                                 | 1             |

### Power Derating Curve



\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

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.

### Material Characteristics

Resistor ..... Thick film  
Substrate ..... Alumina (AL2O3)  
Housing ..... Epoxy  
Pins..... Tinned Copper (Sn/Cu)  
Flammability ..... Conforms to UL-94V0

### Popular Resistance Values

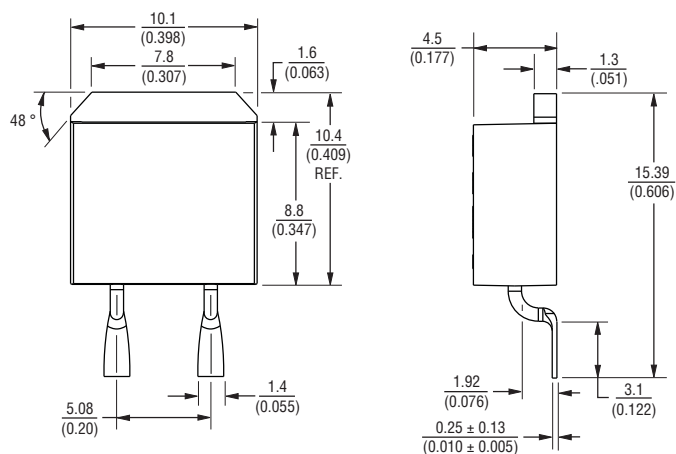
| Code | Resistance Value | Code | Resistance Value |
|------|------------------|------|------------------|
| R020 | 0.02 Ω***        | 1000 | 100 Ω            |
| R025 | 0.025 Ω***       | 1200 | 120 Ω            |
| R030 | 0.03 Ω***        | 1500 | 150 Ω            |
| R033 | 0.033 Ω***       | 2000 | 200 Ω            |
| R040 | 0.04 Ω***        | 2500 | 250 Ω            |
| R050 | 0.05 Ω***        | 3000 | 300 Ω            |
| R075 | 0.075 Ω***       | 3300 | 330 Ω            |
| R100 | 0.1 Ω            | 4000 | 400 Ω            |
| R150 | 0.15 Ω           | 4700 | 470 Ω            |
| R200 | 0.2 Ω            | 5000 | 500 Ω            |
| R250 | 0.25 Ω           | 5600 | 560 Ω            |
| R300 | 0.3 Ω            | 7500 | 750 Ω            |
| R330 | 0.33 Ω           | 1001 | 1.0 KΩ           |
| R400 | 0.4 Ω            | 1501 | 1.5 KΩ           |
| R500 | 0.5 Ω            | 2001 | 2.0 KΩ           |
| R750 | 0.75 Ω           | 2501 | 2.5 KΩ           |
| 1R00 | 1 Ω              | 3001 | 3.0 KΩ           |
| 1R50 | 1.5 Ω            | 3301 | 3.3 KΩ           |
| 2R00 | 2 Ω              | 4001 | 4.0 KΩ           |
| 2R50 | 2.5 Ω            | 5001 | 5.0 KΩ           |
| 3R00 | 3 Ω              | 7501 | 7.5 KΩ           |
| 3R30 | 3.3 Ω            | 1002 | 10 KΩ            |
| 4R00 | 4 Ω              | 1502 | 15 KΩ            |
| 5R00 | 5 Ω              | 2002 | 20 KΩ            |
| 7R50 | 7.5 Ω            | 2502 | 25 KΩ            |
| 8R00 | 8 Ω              | 3002 | 30 KΩ            |
| 10R0 | 10 Ω             | 3302 | 33 KΩ            |
| 12R0 | 12 Ω             | 4002 | 40 KΩ            |
| 15R0 | 15 Ω             | 4702 | 47 KΩ            |
| 20R0 | 20 Ω             | 5002 | 50 KΩ            |
| 25R0 | 25 Ω             | 5602 | 56 KΩ            |
| 27R0 | 27 Ω             | 6802 | 68 KΩ            |
| 30R0 | 30 Ω             | 7502 | 75 KΩ            |
| 33R0 | 33 Ω             | 8202 | 82 KΩ            |
| 40R0 | 40 Ω             | 1003 | 100 KΩ           |
| 47R0 | 47 Ω             | 1153 | 115 KΩ           |
| 50R0 | 50 Ω             | 1203 | 120 KΩ           |
| 56R0 | 56 Ω             | 1253 | 125 KΩ           |
| 75R0 | 75 Ω             | 1303 | 130 KΩ           |

\*\*\* 5 % Tolerance

# PWR263S-20 Series Power Resistor

**BOURNS®**

## Product Dimensions



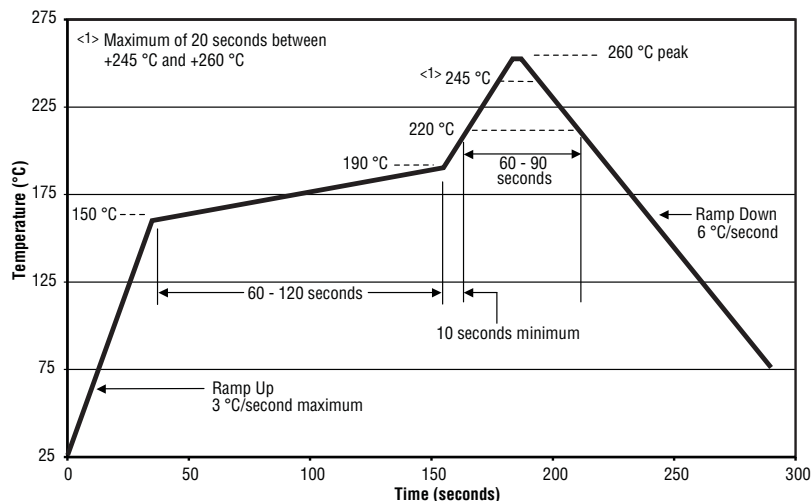
1 2  
BACKPLANE  
ELECTRICALLY  
ISOLATED

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

TOLERANCE:  $\pm 0.38$  (±0.015) UNLESS OTHERWISE NOTED

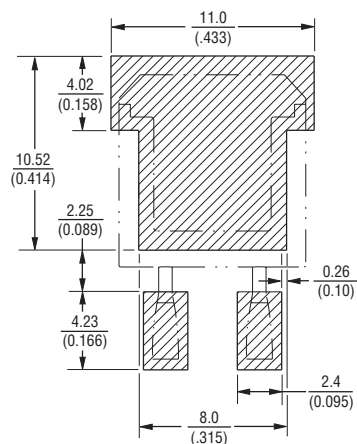
LEAD: 0.102 MAX AT MOUNTING  
COPLANARITY: (0.004) SURFACE

## Soldering Profile

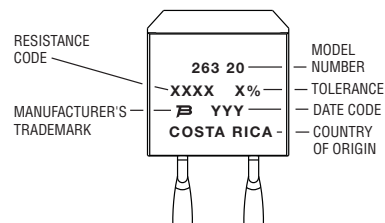


Power dissipation is 2.8 W at an ambient temperature of 25 °C when mounted on a double-sided copper board using FR4 standard, 70  $\mu\text{m}$  of copper, 39 x 30 x 1.6 mm.

## Recommended Pad Layout



## Typical Part Marking



## How to Order

**PWR 263 S - 20 - 10R0 F E**

Model   
PWR = Power Resistor

Package   
263 = D<sup>2</sup>PAK

Pin Style   
S = Surface Mount

Power   
20 = 20 W

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

Absolute Tolerance   
J = 5 %  
F = 1 %

Packaging   
E = Tape & Reel  
Blank = Tubes

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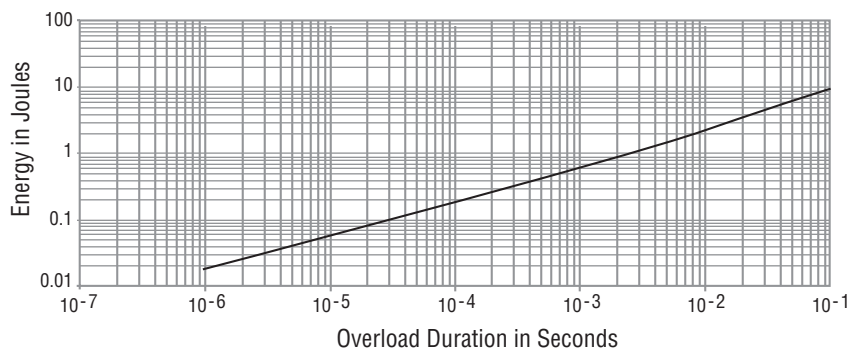
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## PWR263S-20 Series Power Resistor

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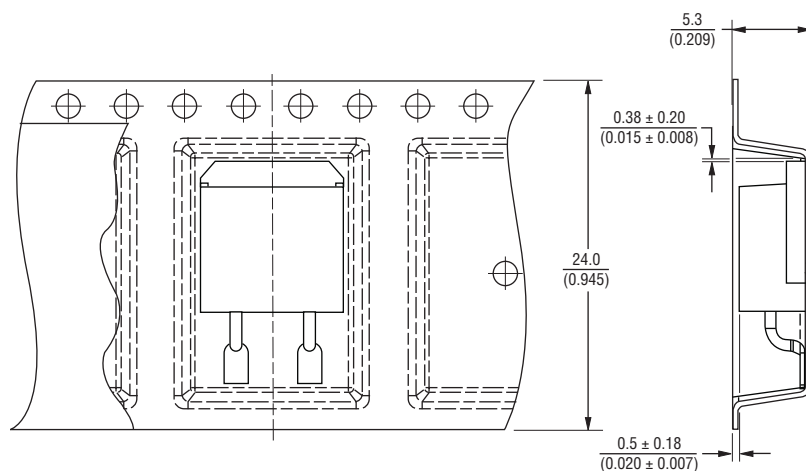
### Pulse Power Rating



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.

### Packaging Specifications



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$   
TOLERANCE:  $\frac{\pm 0.38}{(\pm 0.015)}$  UNLESS OTHERWISE NOTED

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REV. 02/15

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