

Features

- Smaller than a D²PAK package
- Low inductance
- Resistor electrically isolated from the backplate
- High power rating
- Compatible with lead free solder reflow temperatures
- RoHS compliant*

- AEC-Q200 qualified

Applications

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

PWR163 Series Power Resistor

General Information

The PWR163 Series is a DPAK style surface mount power resistor. It has a very low inductance making it ideal for high frequency applications such as amplifiers for audio or wireless base stations. It has excellent pulse characteristics as well, allowing it to be used in current limiting or capacitor discharge circuits.

Electrical & Thermal Characteristics

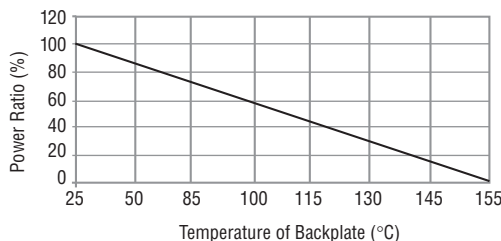
| Parameter | Value(s) |
|---|------------------------------|
| Resistance (See Popular Resistance Values table) | 0.02 Ω to 130 KΩ |
| Power Rating @ 25 °C Case Temperature | 25 W |
| Tolerance | ±1 %**, ±5 % |
| TCR | ±100 PPM/°C |
| Thermal Resistance - R _{thj} | 5.2 °C/W |
| Inductance | 0.1 μH 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 P _r for R < 2 Ω, 1.6 x P _r 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 |

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

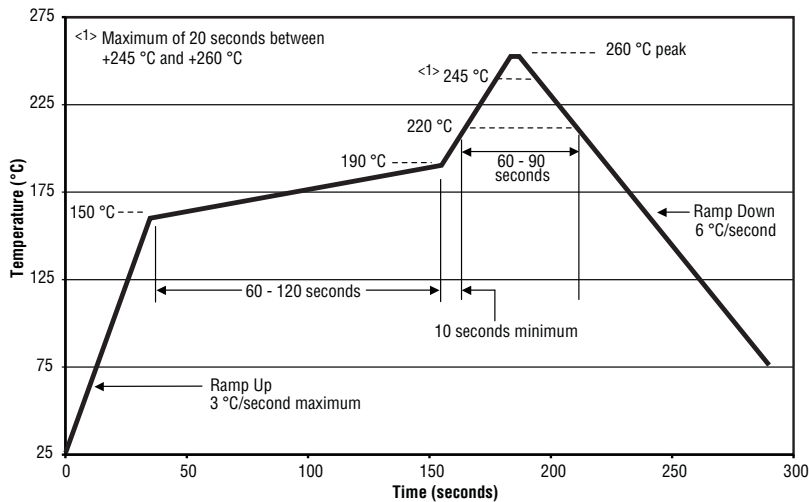
| Code | Resistance Value | Code | Resistance Value |
|------|------------------|------|------------------|
| R020 | 0.02 Ω*** | 1000 | 100 Ω |
| R025 | 0.025 Ω*** | 1200 | 120 Ω |
| R030 | 0.03 Ω*** | 1500 | 150 Ω |
| R033 | 0.033 Ω*** | 2000 | 200 Ω |
| R040 | 0.04 Ω*** | 2500 | 250 Ω |
| R050 | 0.05 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

PWR163 Series Power Resistor

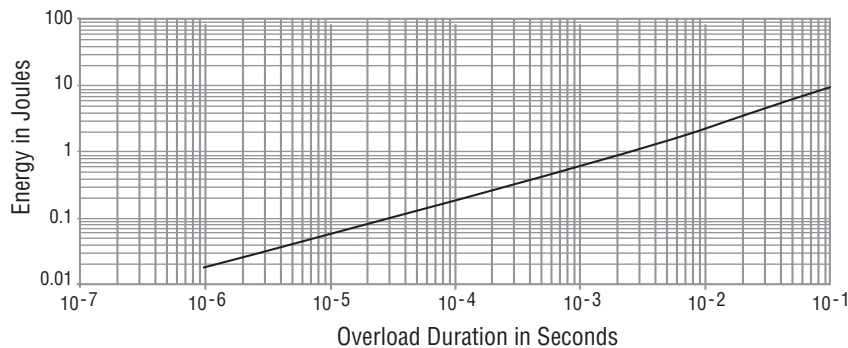


Soldering Profile



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 μm of copper, 39 x 30 x 1.6 mm.

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 163 S - 25 - 10R0 J E

Model _____
 PWR = Power Resistor

Package _____
 163 = DPAK Style

Pin Style _____
 S = Surface Mount

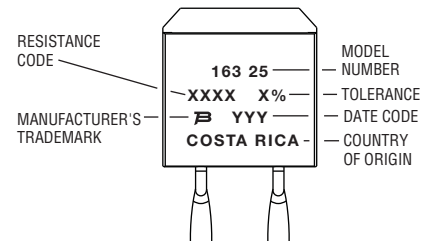
Power _____
 25 = 25 W

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 _____
 J = 5 %
 F = 1 %

Packaging _____
 E = Tape & Reel
 Blank = Tubes

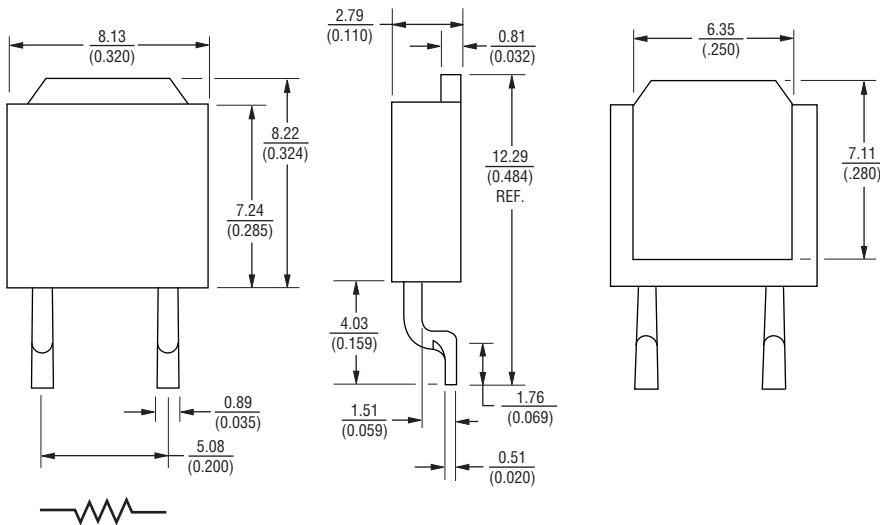
Typical Part Marking



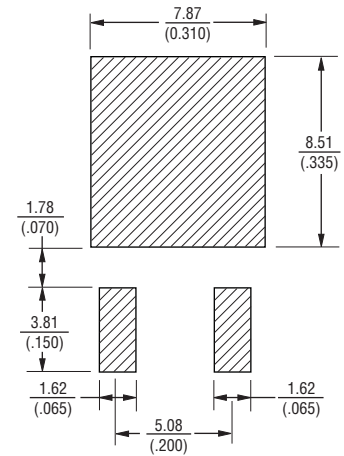
PWR163 Series Power Resistor

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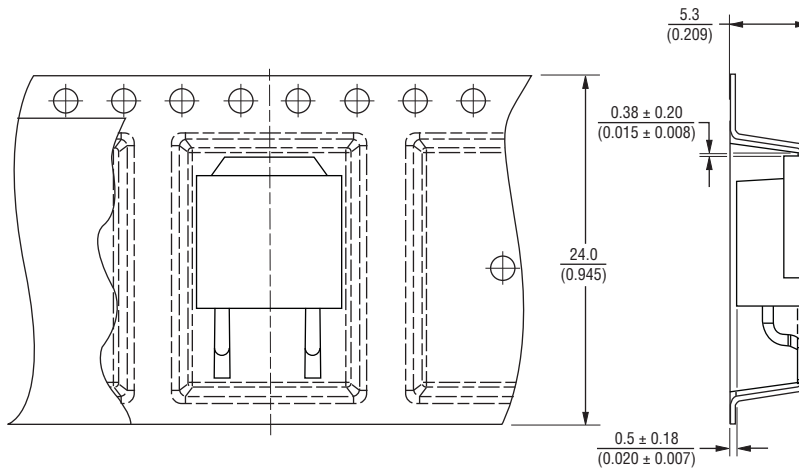
Product Dimensions



Recommended Pad Layout



Packaging Specifications



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

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REV. 10/13

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