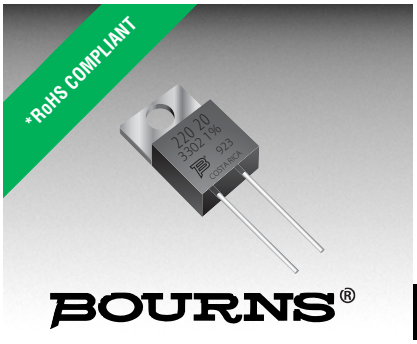
**EN:** This Datasheet/Document is presented by the manufacturer.

Please visit our website for pricing and availability at www.hestore.hu.




BOURNS®

## Features

- TO-220 housing
- Low inductance
- Resistor electrically isolated from the backplate
- High power rating
- RoHS compliant*

## Applications

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

# PWR220T-20 Series Power Resistor

## General Information

Bourns® PWR220T-20 Series is a TO-220 DPAK style power resistor. Manufactured using thick film on alumina ceramic technology, it is used in current measurement, snubber, bleeder and 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 | 20 W |
| Tolerance | ±1 %**, ±5 % |
| TCR<br>0.02 Ω<R<130.0 KΩ | ±100 PPM/˚C |
| Thermal Resistance - $R_{thj}$ | 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 % |
| Terminal Strength (MIL-STD-202, Method 211 Test A1) | ΔR ±0.2 % |
| Shock (Saw Tooth: 100 g/6 ms) | ΔR ±0.5 % |
| Humidity (Steady State) 1000 hrs. 85 °C/85 % RH | ΔR ±0.5 % |
| High Temperature Exposure (100 hrs - 40 % Pr @ +125 °C) | ΔR ±0.5 % |

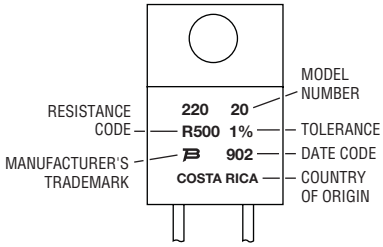
## Material Characteristics

Resistor ..... Thick film
Substrate ..... Alumina (AL203)
Housing ..... Epoxy
Pins..... Tinned Copper (Sn/Cu)
Flammability ..... Conforms to UL-94V0

## Packaging

..... 50 pcs./tube

## Typical Part Marking




## 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

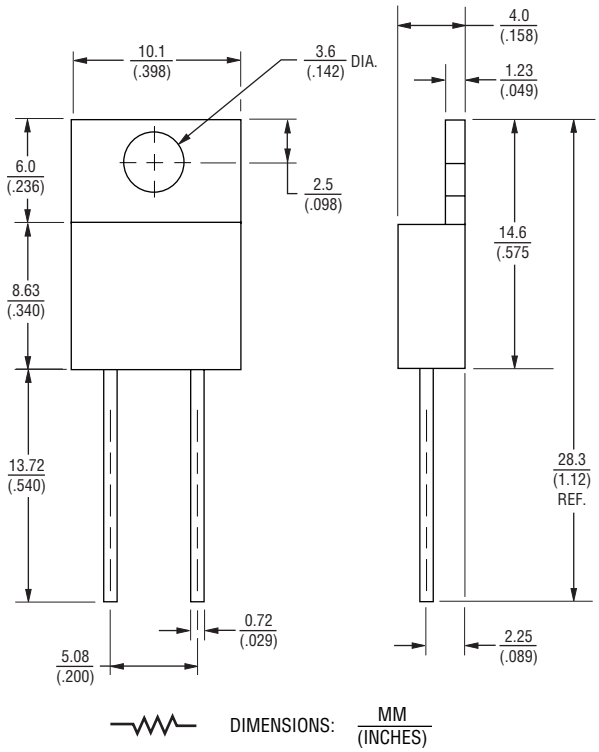
*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

# PWR220T-20 Series Power Resistor

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## Product Dimensions




## How to Order

**PWR 220 T - 20 - 10R0 F**

Model
PWR = Power Resistor

Package
220 = TO-220 Style

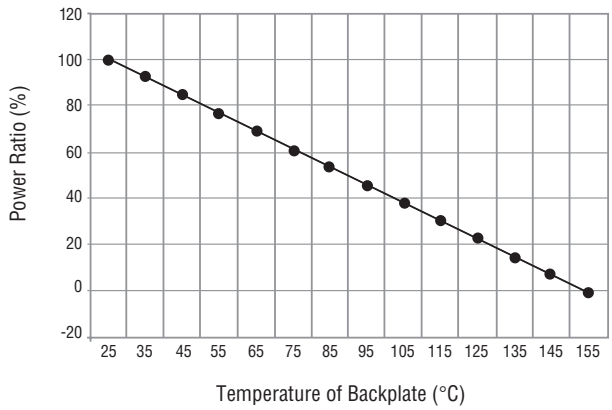
Pin Style
T = Through-hole

Power
20 = 20 W

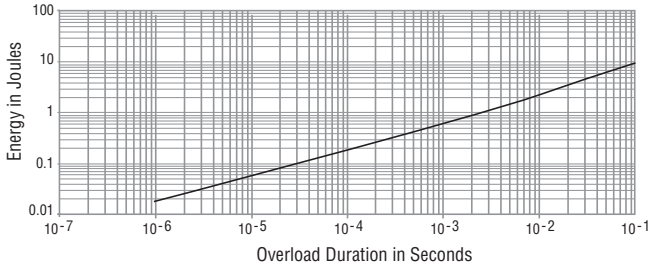
Resistance Value
<100 ohms ... "R" represents decimal point
(examples: 7R50 = 7.5 Ω; R500 = 0.5 Ω)
≥100 ohms.... First three digits are significant, fourth digit represents number of zeros to follow
(examples: 2000 = 200 ohms; 3002 = 30K ohms)

Absolute Tolerance
J = 5 %
F = 1 %

## Derating Curve




## 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.



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