

BOURNS®

Features

- TO-220 housing
- Low inductance
- Resistor electrically isolated from the backplate
- High power rating
- AEC-Q200 qualified
- 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 0.02 Ω<R<130.0K Ω	±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 %

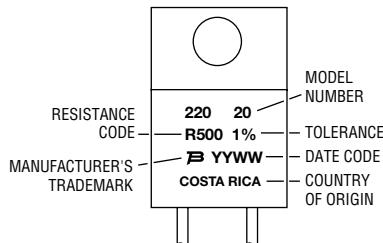
Material Characteristics

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
R1000	1 Ω	3001	3.0 KΩ
R1500	1.5 Ω	3301	3.3 KΩ
R2000	2 Ω	4001	4.0 KΩ
R2500	2.5 Ω	5001	5.0 KΩ
R3000	3 Ω	7501	7.5 KΩ
R3300	3.3 Ω	1002	10 KΩ
R4000	4 Ω	1502	15 KΩ
R5000	5 Ω	2002	20 KΩ
R7500	7.5 Ω	2502	25 KΩ
R8000	8 Ω	3002	30 KΩ
R10000	10 Ω	3302	33 KΩ
R12000	12 Ω	4002	40 KΩ
R15000	15 Ω	4702	47 KΩ
R20000	20 Ω	5002	50 KΩ
R25000	25 Ω	5602	56 KΩ
R27000	27 Ω	6802	68 KΩ
R30000	30 Ω	7502	75 KΩ
R33000	33 Ω	8202	82 KΩ
R40000	40 Ω	1003	100 KΩ
R47000	47 Ω	1153	115 KΩ
R50000	50 Ω	1203	120 KΩ
R56000	56 Ω	1253	125 KΩ
R75000	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.

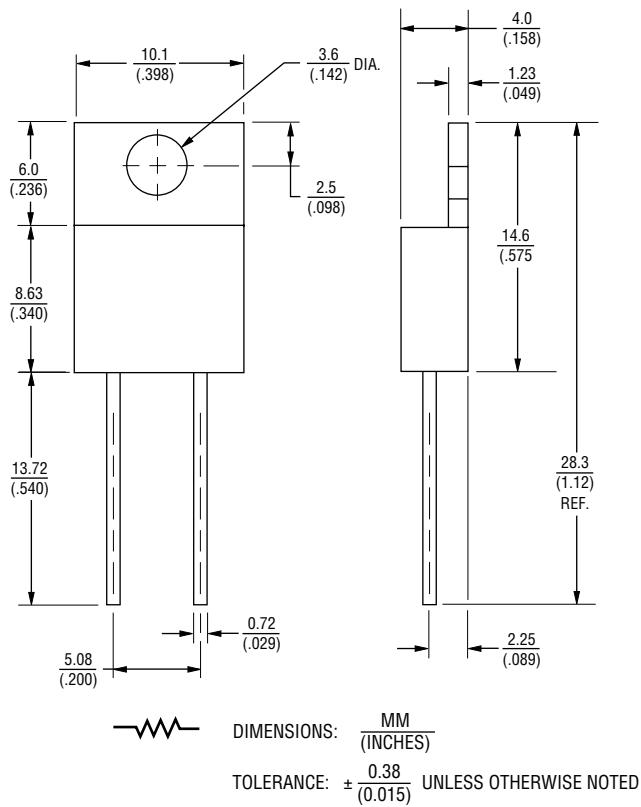
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.

PWR220T-20 Series Power Resistor

BOURNS®

Product Dimensions

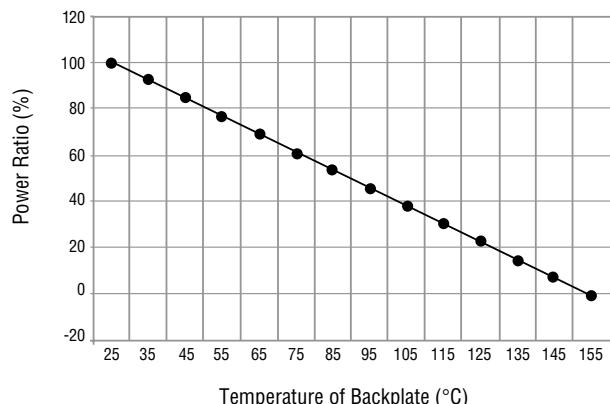


How to Order

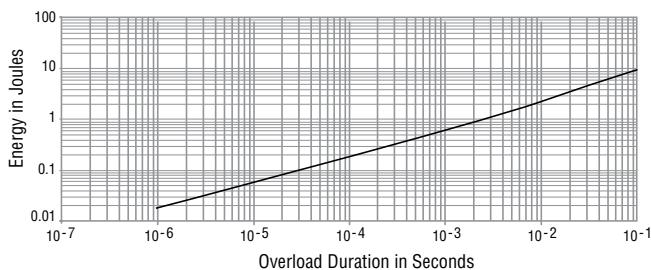
PWR 220 T - 20 - 10R0 F

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.

REV. 07/16

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Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Bourns:

PWR220T-20-1000F	PWR220T-20-1001F	PWR220T-20-10R0F	PWR220T-20-1R00F	PWR220T-20-1R50F
PWR220T-20-2R00F	PWR220T-20-2R50F	PWR220T-20-3300F	PWR220T-20-3R00F	PWR220T-20-3R30F
PWR220T-20-4700F	PWR220T-20-47R0F	PWR220T-20-4R70F	PWR220T-20-50R0F	PWR220T-20-5R60F
PWR220T-20-75R0F	PWR220T-20-7R50F	PWR220T-20-R100F	PWR220T-20-R500F	PWR220T-20-R750F
PWR220T-20-30R0F	PWR220T-20-3301F	PWR220T-20-56R0J	PWR220T-20-20R0J	PWR220T-20-10R0J
PWR220T-20-33R0J	PWR220T-20-R200J	PWR220T-20-1002F	PWR220T-20-R050J	PWR220T-20-1R00J
PWR220T-20-3R30J	PWR220T-20-R270F	PWR220T-20-R200F	PWR220T-20-22R0F	PWR220T-20-1303F
PWR220T-20-2R00J	PWR220T-20-3002J	PWR220T-20-39R0J	PWR220T-20-8R20J	PWR220T-20-56R0F
PWR220T-20-1000J	PWR220T-20-R500J	PWR220T-20-22R0J	PWR220T-20-5R60J	PWR220T-20-2R50J
PWR220T-20-3301J	PWR220T-20-R075J	PWR220T-20-50R0J	PWR220T-20-1003F	PWR220T-20-1R50J
PWR220T-20-2002J	PWR220T-20-15R0F	PWR220T-20-39R0F	PWR220T-20-R300J	PWR220T-20-1002J
PWR220T-20-12R0F	PWR220T-20-20R0F	PWR220T-20-47R0J	PWR220T-20-15R0J	PWR220T-20-3R00J
PWR220T-20-1001J	PWR220T-20-4700J	PWR220T-20-30R0J	PWR220T-20-33R0F	PWR220T-20-75R0J
PWR220T-20-27R0J	PWR220T-20-5602F	PWR220T-20-1303J	PWR220T-20-5R00J	PWR220T-20-4R70J
PWR220T-20-8R20F	PWR220T-20-25R0J	PWR220T-20-3300J	PWR220T-20-1003J	PWR220T-20-R020J
PWR220T-20-7R50J	PWR220T-20-R750J	PWR220T-20-3002F	PWR220T-20-12R0J	PWR220T-20-R100J
PWR220T-20-27R0F	PWR220T-20-R033J	PWR220T-20-82R0F		