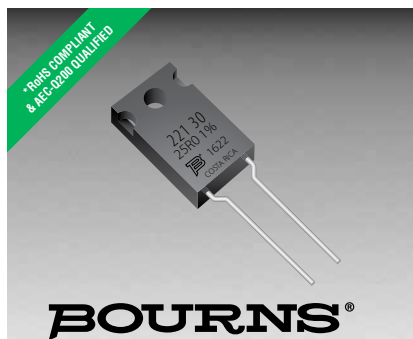




Features

- TO-220 housing
- Low inductance
- Ceramic backplane
- High power rating
- AEC-Q200 qualified
- RoHS compliant*

Applications

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

PWR221T-30 Series Power Resistor

General Information

Bourns® PWR221T-30 Series is a TO-220 style power resistor made using thick film on alumina ceramic technology. It 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 (See Popular Resistance Values table)	0.02 Ω to 130 KΩ
Power Rating @ 25 °C Case Temperature	30 W**
Tolerance	±1 %***, ±5 %
TCR	
0.100 Ω < R < 130.0 K Ω	±100 PPM/°C
0.050 Ω < R < 0.100 Ω	±300 PPM/°C
0.020 Ω < R < 0.050 Ω	±600 PPM/°C
Thermal Resistance - R _{thj}	4.2 °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 +150 °C

** Power rating of 2.25 W when mounted free to air (no heat sink).

*** 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 (2000 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 %

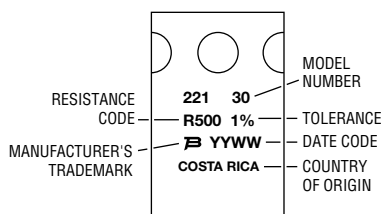
Material Characteristics

Resistor Thick film
 Substrate Alumina (AL2O3)
 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.

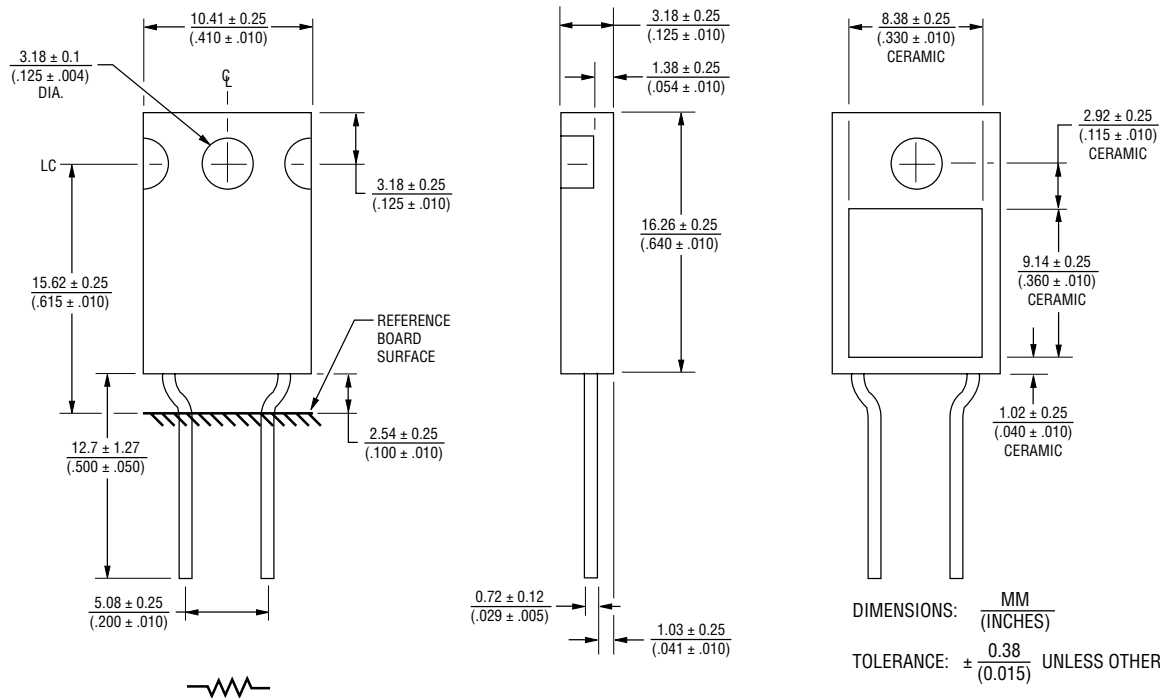
Specifications are subject to change without notice.

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.

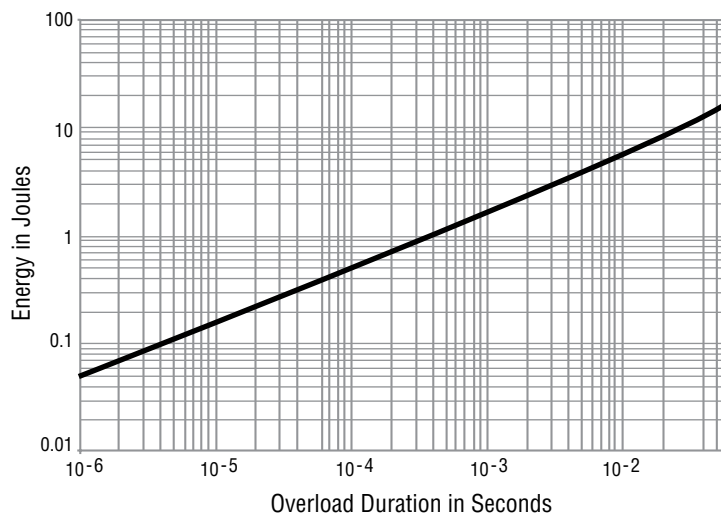
PWR221T-30 Series Power Resistor

BOURNS®

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 221 T - 30 - 10R0 F

Model _____
PWR = Power Resistor

Package _____
220 = TO-220 Style

Pin Style _____
T = Through-hole

Power _____
30 = 30 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)

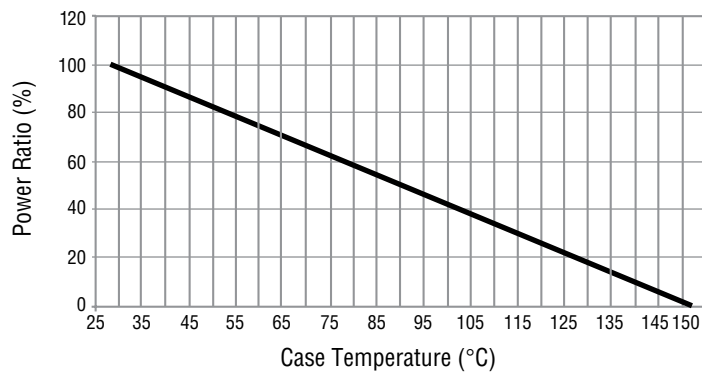
Absolute Tolerance _____
J = 5 %
F = 1 %

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PWR221T-30 Series Power Resistor

BOURNS®

Derating Curve



BOURNS®

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REV. 07/16

Specifications are subject to change without notice.

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Mouser Electronics

Authorized Distributor

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

Bourns:

PWR221T-30-1000F	PWR221T-30-1000J	PWR221T-30-1001F	PWR221T-30-1001J	PWR221T-30-1002F
PWR221T-30-1002J	PWR221T-30-1003F	PWR221T-30-1003J	PWR221T-30-10R0F	PWR221T-30-10R0J
PWR221T-30-1303F	PWR221T-30-1303J	PWR221T-30-15R0F	PWR221T-30-15R0J	PWR221T-30-1R00F
PWR221T-30-1R00J	PWR221T-30-1R50F	PWR221T-30-1R50J	PWR221T-30-2000F	PWR221T-30-2000J
PWR221T-30-20R0F	PWR221T-30-20R0J	PWR221T-30-2R00F	PWR221T-30-2R00J	PWR221T-30-2R20F
PWR221T-30-2R20J	PWR221T-30-2R50F	PWR221T-30-2R50J	PWR221T-30-3002F	PWR221T-30-3002J
PWR221T-30-30R0F	PWR221T-30-30R0J	PWR221T-30-3300F	PWR221T-30-3300J	PWR221T-30-3301F
PWR221T-30-3301J	PWR221T-30-33R0F	PWR221T-30-33R0J	PWR221T-30-3R00F	PWR221T-30-3R00J
PWR221T-30-3R30F	PWR221T-30-3R30J	PWR221T-30-4700F	PWR221T-30-4700J	PWR221T-30-47R0F
PWR221T-30-47R0J	PWR221T-30-4R70F	PWR221T-30-4R70J	PWR221T-30-50R0F	PWR221T-30-50R0J
PWR221T-30-56R0F	PWR221T-30-56R0J	PWR221T-30-5R00F	PWR221T-30-5R00J	PWR221T-30-7500F
PWR221T-30-7500J	PWR221T-30-75R0F	PWR221T-30-75R0J	PWR221T-30-7R50F	PWR221T-30-7R50J
PWR221T-30-8R20F	PWR221T-30-8R20J	PWR221T-30-R020J	PWR221T-30-R050J	PWR221T-30-R100J
PWR221T-30-R500F	PWR221T-30-R500J	PWR221T-30-R750F	PWR221T-30-R750J	PWR221T-30-R100F
PWR221T-30-25R0F	PWR221T-30-1200F	PWR221T-30-12R0F	PWR221T-30-1501F	PWR221T-30-1502F
PWR221T-30-2001F	PWR221T-30-2002F	PWR221T-30-2501F	PWR221T-30-2502F	PWR221T-30-3000F
PWR221T-30-3001F	PWR221T-30-4000F	PWR221T-30-4001F	PWR221T-30-4002F	PWR221T-30-40R0F
PWR221T-30-4702F	PWR221T-30-4R00F	PWR221T-30-5000F	PWR221T-30-5001F	PWR221T-30-5600F
PWR221T-30-7501F	PWR221T-30-8R00F	PWR221T-30-R030J	PWR221T-30-R033J	PWR221T-30-R040J
PWR221T-30-R150F	PWR221T-30-R200F	PWR221T-30-R250F	PWR221T-30-R300F	PWR221T-30-R330F