

Features

- TO220 or TO221 housing
- Low inductance
- SMD and through hole versions
- High power rating



Models PWR220-2FB, PWR221-2FB, and PWR220-2FA are not available and not recommended for new designs.

Models [PWR220T-35](#), [PWR221T-30](#), and [PWR263S-35](#) are suggested alternatives.

PWR220/PWR221 F Series Power Resistors

Material Specifications

Resistor Thick film
 Substrate Alumina (AL203)
 Housing Epoxy/PPS
 Lead Frame Tinned Copper (Sn/Cu)
 Maximum Torque..... 1.0 Nm
 Packaging
 Tubes.....50 pcs./tube
 Tape & Reel** 500 pcs./reel

**Tape & Reel is only available for Versions A and D.

General Information

The Bourns® PWR220 F Series is a TO220 style Power Resistor; PWR221 F is a TO221 style Power Resistor. Manufactured using thick film on Alumina ceramic technology, it is used in applications such as power supplies, motor drives and measurements.

Electrical & Thermal Characteristics

Parameter	Symbol	Min.	Nom.	Max.	Unit
Resistance (Version A)	R	0.02		100K	Ω
(Version C & D)	R	0.02		15K	Ω
Power Rating @ 70 °C in Free Air				1.50	W
Power Rating with External Heat Sink (Version A)				30	W
(Version C & D)				50	W
Tolerance					
0.02 Ω < R < 1.0 Ω		2.0		5.0	%
1.0 Ω < R < 100K Ω		1.0		5.0	%
TCR					
0.1 Ω < R < 100.0K Ω				±100	PPM/°C
0.05 Ω < R < 0.099 Ω				±300	PPM/°C
0.02 Ω < R < 0.049 Ω				±600	PPM/°C
Thermal Resistance – Rthj (Version A)			3.5		°C/W
(Version C & D)			2.1		°C/W
Stability			0.5		%
Dielectric Withstanding Voltage				2	kV DC
Operating Temperature	T _J	-40		+155	°C



WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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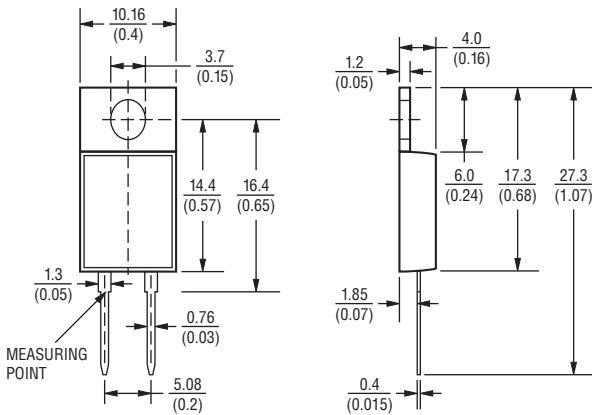
Applications

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

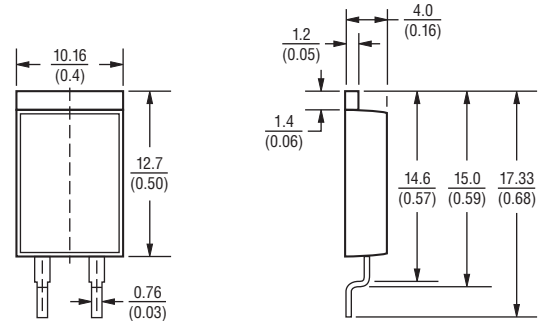
PWR220/PWR221 F Series Power Resistors BOURNS®

Product Dimensions

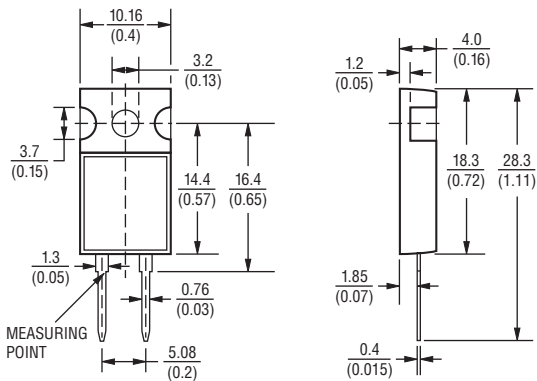
TO220 Housing: 2-Pin



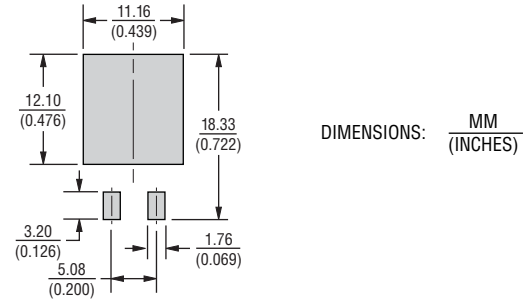
TO220 Casing: 2-Pin (Surface Mount)



TO221 Casing: 2-Pin



Recommended Pad Layout



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

How to Order

PWR 220 - 2 F B R040 J E

Model _____

PWR = Power Resistor

Package _____

220 = TO220
221 = TO221

Number of Pins _____

2 = 2

Function _____

F = Thick Film

Version _____

A = TO220 Housing, Surface Mount, 30 W (w/Heat Sink)
C = TO220 Housing/TO221 Housing, Through-Hole, 50 W (w/Heat Sink)
D = TO220 Housing, Surface Mount, 50 W (w/Heat Sink)

Resistor Value for all Tolerances _____

<100 ohms "R" represents decimal point
(examples: 7R50 = 7.5 ohms; R040 = 0.040 ohms)
≥100 ohms First three digits are significant, fourth digit represents number of zeros to follow
(examples: 2000 = 200 ohms; 2002 = 20K ohms)

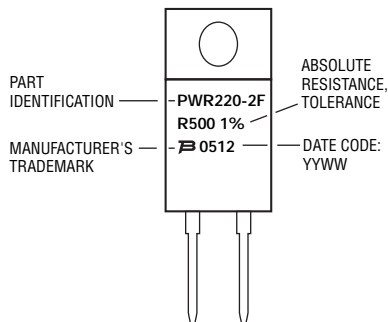
Absolute Tolerance _____

J = 5 % G = 2 % F = 1 %

Packaging _____

E = Tape & Reel (Available only for Versions A and D)
___ = Tubes

Typical Part Marking

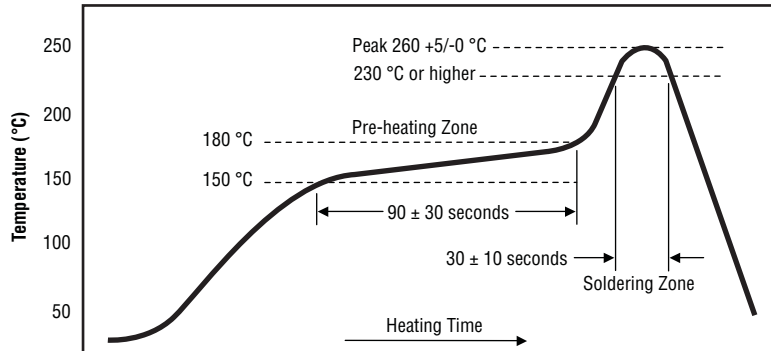


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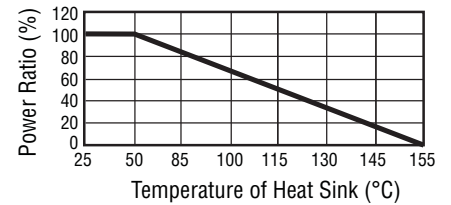
PWR220/PWR221 F Series Power Resistors



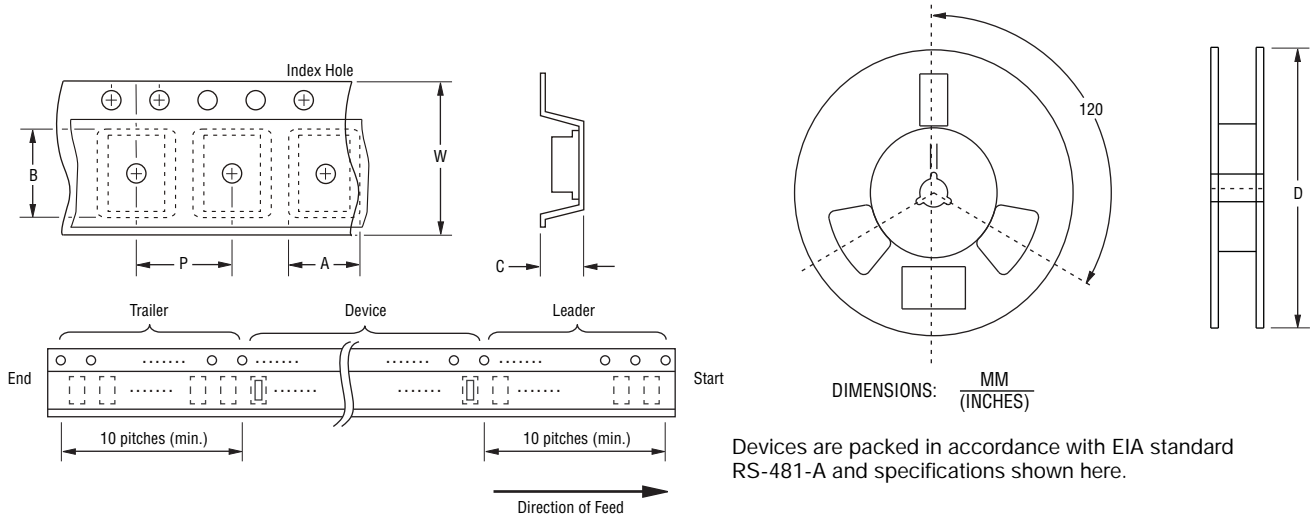
Soldering Profile (Surface Mount Version Only)



Derating Curve



Packaging Dimensions



Devices are packed in accordance with EIA standard RS-481-A and specifications shown here.

Item	Symbol	Dimensions
Carrier Width	A	$\frac{10.4}{(0.409)}$
Carrier Length	B	$\frac{18.4}{(0.724)}$
Carrier Depth	C	$\frac{4.4}{(0.173)}$
Reel Outside Diameter	D	$\frac{330}{(12.992)}$
Punch Hole Pitch	P	$\frac{16.00}{(0.630)}$
Tape Width	W	$\frac{32}{(1.260)}$
Quantity per Reel	—	500



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REV. 09/19

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