

# PF2200 Series

TO-220 Power Thin Film Resistors



- TO-220 Housing
- Rated Power to 50 Watts
- Resistances from 0.02 to 51K Ohms
- High Stability Film Resistance Elements
- Resistance Tolerance to  $\pm 0.1\%$
- TCR to  $\pm 50\text{ppm}/^\circ\text{C}$
- Low Inductance ( $< 10\text{nH}$ )
- Excellent Pulse Handling
- Isolated Mounting Tab

## SPECIFICATIONS

Type	Power Rating		Thermal Resistance	Resistance Range <sup>3</sup>		Tolerances	Temperature Coefficients
	Heatsink <sup>1</sup>	Free Air <sup>2</sup>		Min	Max		
<b>PF2205</b>	50W	1W	2.3°C/W	0.02Ω	51KΩ	$\pm 1\%$ ( $R \geq 0.1\Omega$ ) $\pm 5\%$	$\pm 50\text{ppm}/^\circ\text{C}$ ( $R \geq 10\Omega$ ) $\pm 100\text{ppm}/^\circ\text{C}$ ( $0.1\Omega \leq R < 10\Omega$ ) $\pm 250\text{ppm}/^\circ\text{C}$ ( $R < 0.1\Omega$ )
<b>PF2203</b>	35W	1W	3.3°C/W	0.01Ω	51KΩ	1% ( $R \geq 0.1\Omega$ ) $\pm 5\%$	$\pm 50\text{ppm}/^\circ\text{C}$ ( $R \geq 10\Omega$ ) $\pm 100\text{ppm}/^\circ\text{C}$ ( $0.1\Omega \leq R < 10\Omega$ ) $\pm 250\text{ppm}/^\circ\text{C}$ ( $R < 0.1\Omega$ )
<b>PF2202</b>	20W	1W	5.9°C/W	0.02Ω	51KΩ	0.1%, 0.25%, 0.5%, ( $R \geq 10\Omega$ ) $\pm 1\%$ ( $R \geq 0.1\Omega$ ) $\pm 5\%$	$\pm 50\text{ppm}/^\circ\text{C}$ ( $R \geq 10\Omega$ ) $\pm 100\text{ppm}/^\circ\text{C}$ ( $0.1\Omega \leq R < 10\Omega$ ) $\pm 250\text{ppm}/^\circ\text{C}$ ( $R < 0.1\Omega$ )

<sup>1</sup> Power rating based on 25°C Flange Temperature

<sup>2</sup> Power rating based on 25°C Ambient Temperature

<sup>3</sup> Consult Factory for Higher or Lower Values

Specification	Value
Temperature Range	-55°C to +175°C
Dielectric Strength	2000 VAC
Max. Operating Voltage	$\sqrt{P * R}$ ( 500V MAX )
Insulation Resistance	>1000 Meg-Ohm
Terminal Finish	Tin Plated Copper
Inductance	PF2202 / PF2203 8.38 nH, PF2205 9.65 nH
Flammability	UL94 V-0
Mass	2.1g

## Ordering Information

Part Description: Part Type - Resistance - Tolerance - TCR

Example: PF2203 0.5 Ohm 1% 100ppm

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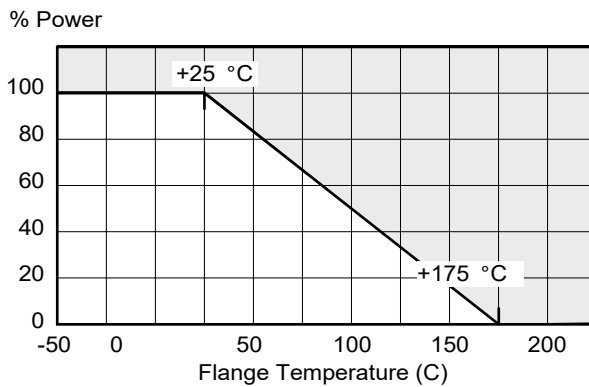
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## SPECIFICATIONS (continued)

Environmental Performance	$\Delta R$	Test Conditions
Load Life	$\pm 1\%$	25°C, 90 min ON, 30 min OFF, 1000 hr
Humidity Resistance	$\pm 1\%$	40°C, 90-95% RH, DC 0.1W, 1000 hr
Temperature Cycle	$\pm 0.25\%$	-55°C for 30 min, +155°C for 30 min, 5 cycles
Solder Heat	$\pm 0.1\%$	+350 / -5°C 3s
Vibration	$\pm 0.25\%$	IEC60068-2-6

### Power Derating



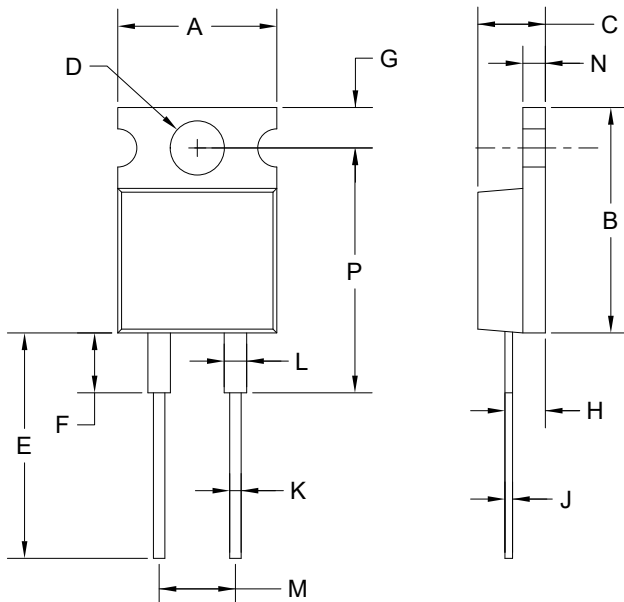
### Power Rating Notes -

The PF2200 Series Thin Film Resistors must be attached to a suitable heatsink. Without a heatsink the maximum power rating is 1W ( 1/2W for the PF2201 ). The maximum internal resistor temperature is 175°C.

To specify an appropriate heatsink use the following formula :

$$P = \frac{T_{MAX} - T_A}{R_{\theta H} + R_{\theta R}}$$

Where:  $R_{\theta H}$  = Thermal Resistance of Heatsink ( °C/W )  
 $R_{\theta R}$  = Thermal Resistance of Resistor ( °C/W )  
 $T_{MAX}$  = Maximum Temperature of Resistor ( °C )  
 $T_A$  = Ambient Temperature of Heatsink ( °C )  
 $P$  = Power Through Resistor ( W )



### Mounting Notes -

The PF2200 Series Thin Film Resistors must be attached to a suitable heatsink. Mount resistor using thermal grease to a clean, flat surface. Use a compression washer to provide 150 to 300 pounds ( 665 to 1330N ) of mounting force. Torque mounting screw to 8 in-lbs ( 0.9 N-m ).

Mounting tab is isolated from both pins.

Dimension	mm	tol. (±mm)	inches	tol. (±inches)
A	10.1	0.2	0.40	0.008
B	15.0	0.2	0.60	0.008
C	4.5	0.2	0.18	0.008
D	3.6	0.1	0.14	0.004
E	15.5	1.0	0.61	0.04
F	4.0	0.5	0.16	0.02
G	3.0	0.2	0.12	0.008
H	2.75	0.2	0.11	0.008
J	0.5	0.05	0.02	0.002
K	0.75	0.05	0.03	0.002
L	1.5	0.05	0.06	0.002
M	5.08	0.1	0.20	0.004
N	1.5	0.05	0.06	0.002
P	16.0	0.50	0.63	0.02

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## PULSE ENERGY DURABILITY

