

## Features

- Formerly a Riedon™ product
- Resistance values as low as 1 mΩ
- Power rating to 40 W
- Resistance stability to ±0.1 %
- Low thermal EMF: <1 μV/°C
- Metal foil technology

## Applications

- Current sensing
- Power supplies
- Stepper motor drives
- Input amplifiers

## FWP2324 Series – Precision Foil Power Resistor

### Electrical Characteristics

Bourns Model	Power Rating @ 70 °C		Resistance Range	Tolerance (%)	TCR 20 °C to 60 °C (PPM/°C)	Max. Current (A)	Dielectric Withstanding Voltage (VDC)	Max. Torque (Nm)
	Free Air Heat Sink	2.5 W 15 W						
FWP2324	Free Air Heat Sink	2.5 W 15 W	1 mΩ to 9 mΩ	±0.5 ±1 ±2 ±5	±25 ±15	150	500	0.8
			10 mΩ to 50 Ω	±0.1 ±0.25 ±0.5				
FWP2324H	Free Air Heat Sink	3 W 40 W	1 mΩ to 5 mΩ	±1 ±2 ±5	±10 ±5 ±2	150	300	0.8
			6 mΩ to 20 Ω	±1 ±2 ±5			500	

### Environmental Characteristics

Specification	Value
Operating Temperature	-40 °C to +130 °C
Thermal EMF	< 1 μV/°C
Thermal Resistance	2.0 K/W
Storage Conditions Temperature Humidity	+5 °C to +35 °C 40 % to 75 %
Moisture Sensitivity Level	1

### How To Order

**FWP232 4 H - F P - R005 T**

Model \_\_\_\_\_  
 FWP232 = Power Resistor

Pin Terminals \_\_\_\_\_  
 4 = 4 Pins

Power Type \_\_\_\_\_  
 (blank) = 15 W H = 40 W

Resistance Tolerance \_\_\_\_\_  
 B = ±0.1 % C = ±0.25 % F = ±1 %  
 G = ±0.2 % D = ±0.5 % J = ±5 %

TCR (PPM/°C) \_\_\_\_\_  
 L = ±2 N = ±10 Q = ±25  
 M = ±5 P = ±15

Resistance Value Code \_\_\_\_\_  
 "L" represents mΩ for resistance values below 1 mΩ (example: 1L50 = 1.5 mΩ, 3L30 = 3.3 mΩ)  
 "R" represents decimal point  
 (example: R005=0.005Ω, 1R00=1.00 Ω)

Packaging \_\_\_\_\_  
 T = Tube (25 pcs. per plastic tube)

The PWR2324 Series resistors must be attached to a suitable heat sink. The maximum internal resistor temperature is 130 °C

### Additional Information

Click these links for more information:



#### CALIFORNIA WARNING:

Can expose you to lead, a carcinogen and reproductive toxicant.

See [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

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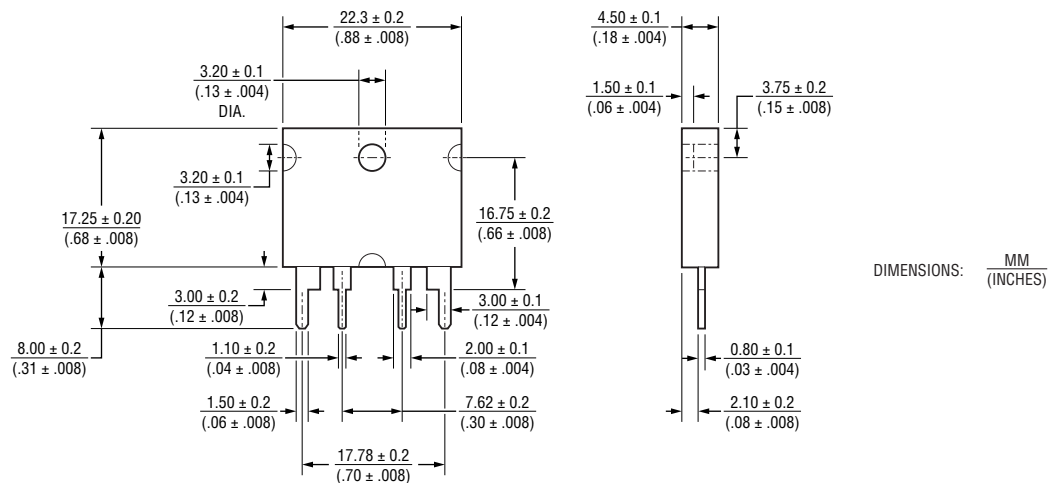
# FWP2324 Series – Precision Foil Power Resistor



## Performance Characteristics

Test	Conditions	Test Method	
		Reference	Limit
Load Life	1000 hours, on/off with rated power at +25 °C	MIL-STD-202 Method 108	$\Delta R < \pm 0.5 \%$
High Temperature Exposure	+130 °C for 1000 hours	MIL-STD-202 Method 303	$\Delta R < \pm 0.5 \%$
Low Temperature Storage	-40 °C for 24 hours	MIL-STD-202 Method 303	$\Delta R < \pm 0.5 \%$
Thermal Shock	-40 °C to +130 °C, 5 cycles	MIL-STD-202 Method 107	$\Delta R < \pm 0.1 \%$
Humidity Resistance	+40 °C / 90 % for 240 hours	MIL-STD-202 Method 103	$\Delta R < \pm 0.1 \%$
Resistance to Solder Heat	Solder dipping at 260 °C for 10 sec.	MIL-STD-202 Method 210	$\Delta R < \pm 0.1 \%$
Short Time Overload	2.5x rated power for 5 sec.	MIL-STD-202 Method 303	$\Delta R < \pm 0.1 \%$

## Product Dimensions



Specifications are subject to change without notice.

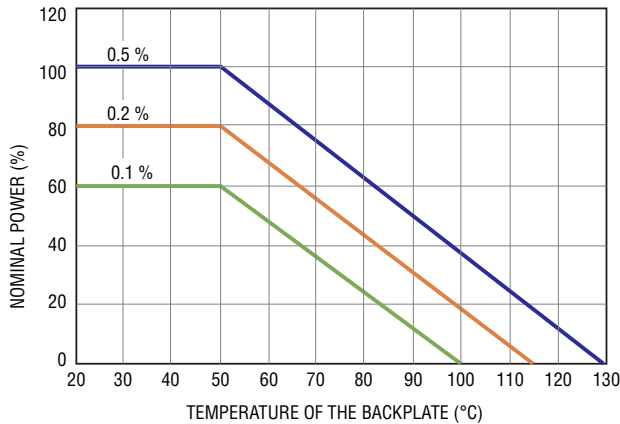
Users should verify actual device performance in their specific applications.

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# FWP2324 Series – Precision Foil Power Resistor



## Power Derating Curve



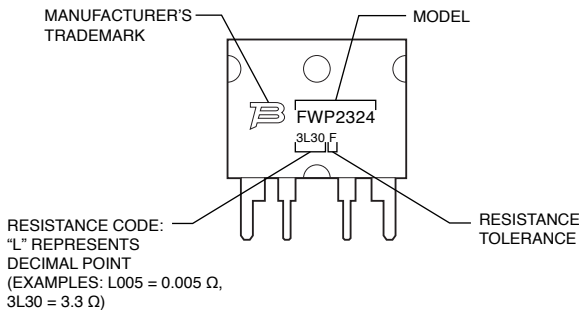
## Power Rating Notes

The FWP2324 Series Resistors must be attached to a suitable heat sink. The maximum internal resistor temperature is 130 °C. To specify an appropriate heat sink use the following formula:

$$R_{\theta H} = \frac{T_{MAX} - (P \times R_{\theta R}) - T_A}{P}$$

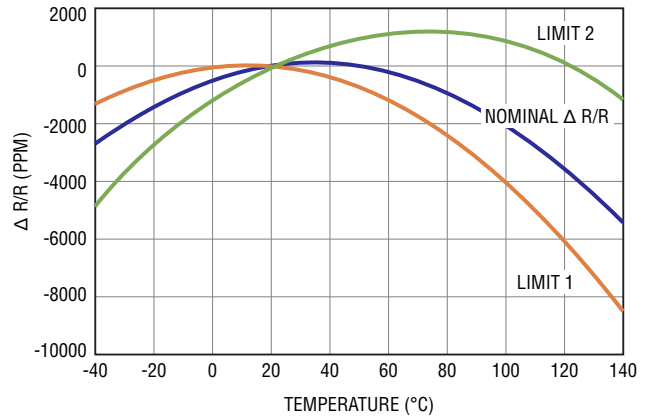
Where:  $R_{\theta H}$  = Thermal Resistance of Heat Sink (K/W)  
 $R_{\theta R}$  = Thermal Resistance of Resistor (K/W)  
 $T_{MAX}$  = Maximum Temperature of Resistor  
 $T_A$  = Ambient Temperature of Heat Sink (°C)  
 $P$  = Power Through Resistor (W)

## Typical Part Marking

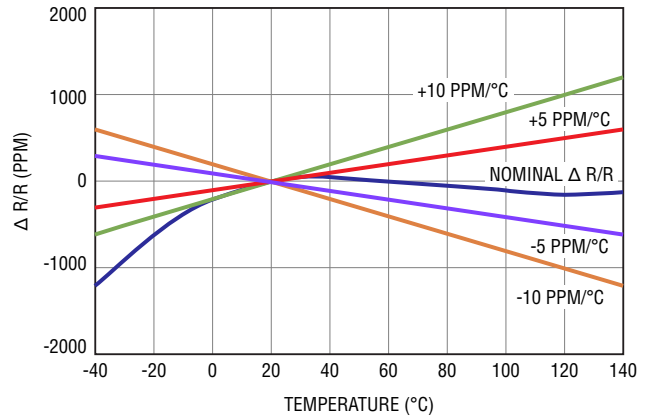


## Temperature Coefficient Charts

### PWR2324



### PWR2324P



## Packaging Information

Tube ..... 25 pcs. per tube



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